VOL. VII. APRIL, 1897. No. 3.

THE MONIST.

HEGEL TO-DAY.[1]

I.

PHILOSOPHICAL SYSTEMS have their ups and downs in the world as well as books. And in no instance is this shown with greater clearness than by the place which Hegel occupies to-day in philosophy. After having first enravished the intellect of Germany and profoundly contributed to the moulding of her institutions, he was subsequently so far dislodged from his commanding position as to be almost entirely forgotten by the present generation. Undoubtedly his personality still persists in us as thoughts, ideals, and even as words, but his system as a whole now finds but few isolated votaries, and it is not uncommon to find persons who deem it an unfailing mark of scientific acumen to disparage Hegel and to treat him as a pretender in the realm of speculation.

Utterly different is the situation in America and England. Here we see Hegel constantly gaining new friends and constantly extending his influence. More and more his system is becoming the rallying-point of all who stand in need of a comprehensive scheme for combating scepticism, dualism, and utilitarianism; and to many he seems to offer a durable foundation not only for philosophy, but also for the practical conduct of life.

The wide gulf which separates opinion of the philosopher at home and appreciation of him abroad affords tempting material for

[1] Translated from Professor Eucken's manuscript by Thomas J. McCormack.

discussion. But to treat it we must first sketch as tersely and lucidly as possible the leading characteristics of Hegel's philosophy as well as glance at the historical conditions out of which it grew.

Two great intellectual currents are merged in Hegel's system. The first is the philosophy of the great German classical writers, developed in opposition to the rationalistic movement of the eighteenth century, rising in Herder and culminating in Goethe. This philosophy opposed with might and main the exclusive hegemony of the intellect, of ratiocination, of reflexion pure and simple; it sought a more primordial source, a more promising outlook for life. It was not content to interpret the world solely from the point of view of man and to shape it with reference to his special ends, but the things of the world were invested with appropriate potentialities of their own, and reality was conceived as embracing far more comprehensive and purer forms of life than those appurtenant to man individually. Nature and history thus took on a profundity and vitality with which they were never endued before, and to man himself, as the outcome of his widened relations, was opened up a far fuller life and far deeper vistas into the truth than had ever before been held out to him.

The second current of influences which moulded the intellectuality of the thinkers of the nineteenth century proceeded from Kant. In the philosophy of Kant the thinking subject was severed from all outward connexions, and installed in a position of absolute independence as regards the world. Reality was degraded to a realm of purely phenomenal appearances, while the sphere of objectivity, the sovereign domain of the thing-in-itself, seemed utterly and hopelessly beyond man's reach. At first blush, the tenets of the critical philosophy appear to be in violent contrast with the views of the great poets. But closer examination discloses bonds of union. The poets were quite averse to the notion of a completed world; they expressly reserved to their imagination, to their artistic creative faculty the function of imparting new life and higher value to reality. On the other hand, by the "subject" which gives shape and being to the empirical world, Kant does not mean the individual as such, so much as the intellectual organisation of in-

dividuals. His discovery—the point he developed—related to the inward constitution of the mind; in his *Practical Reason* he even created, entirely from within, a realm of absolute reason.

The combining of two movements having such affinities was therefore a perfectly natural step. The world wherein all contrarieties were reconciled, and for which all men longed, was discovered in the human mind itself. Inwardness was made synonymous with universe.

The effort thus briefly sketched constituted the pith and kernel of all speculative philosophy from Fichte to Hegel; the individual bent of each thinker being expressed by the particular operation which he selected as the embodiment of the world and in which he sought the creative action of the mind. Fichte found its typification in ethics, which afterwards assumed with him a religious coloring; Schelling found it in the various leading phases of his individual life, in his physico-philosophical, æsthetical, and religio-historical speculations; Hegel, finally, discovers its embodiment in logic, which grows with him to proportions of omnipotence, dominating the whole cosmos and all history. With logic the movement first assumes its fullest universality, first actually begins to push the entering wedge into the entire broad fabric of reality. And here, therefore, the culminating point unquestionably is reached, and we have only to see the form which Hegel's philosophy assumes, as reared upon these foundations.

II.

Hegel cannot make thought the essence and kernel of reality without lifting it far above immediate subjective reflexion. He does so by rejecting the opinings and longings of individuals as absolutely outside the pale of science; the upshot being that we are obliged to divorce our personal crochets and predilections altogether from research and to consider solely the gist of the matter, as that is shaped by immanent necessity. If this be done, our thought is not something special and isolated, having an allotted place by the side of other sorts of thought, but it is thought itself, pure and simple, and bearing within itself the assurance of abso-

lute truth. Without such certainty, there can exist, according to Hegel, no impulse to philosophical work. In diametrical contrast to those who cannot restrict the barriers of human knowledge sharply enough, he says: "The courage of truth, faith in the pow-"ers of the mind is the first condition of philosophical research. "Man must honor himself and esteem himself worthy of the high-"est there is. He cannot rate the greatness and potency of mind "too high. The locked heart of the universe has no power that "can withstand the courageous assaults of the intellect; it must "open its doors to it, and lay its riches and depths before its eyes "and render them subservient to its pleasure."

Further, the thought which in Hegel's conception produces reality, is not a quiescent, completed existence, but a living spring whose waters incessantly gush forth and are constantly spreading. It constitutes a process impelled by its own forces and governed by its own laws. One simple fundamental principle appears to be at the bottom of all its varied intricacy: the law of movement by contrariety. From every thesis springs an antithesis, and the two together strive for synthesis. This latter forms a new starting-point and produces new antitheses and syntheses, and so the process goes on until finally all reality is caught in the movement.

More closely considered, this liquefaction of reality signifies that all concepts involve contradictions which come to light in movement, which dissolve the original concept and afterwards engender new concepts. In Hegel's view "all things are self-contradictory," and there exists "in every actuality a combination of existence and non-existence." By the agency of the negative the concept is enabled to pursue naturally its further development. The method becomes a genuine dialectic and appears in no respect a procedure forcibly impressed upon things by man, but as something spontaneously proceeding from the things themselves, or as "the natural and spontaneous movement of the concept." As this movement is developed, and forges onward according to the rhythmic law of negative and positive, gradually everything foreign and extrinsic is subdued, all darkness is transformed into light, and all death into life. Ultimately the mind will know all things as its own

and therewith reach the culminating acme of clear self-consciousness. "The true is the whole. But the whole is only that which is reaching perfection through its own spontaneous development." In this movement every stage is a transitional point only. Nothing that is individual can detach and establish itself without soon becoming a prey to lethargy and error. In the very moment at which a thing reaches its perfection, and so has fulfilled its purpose, begins its decline. Thus, life becomes an incessant struggling. But struggle is not absolute decay, outward disappearance is not complete extinction. Everything that sacrifices its individual existence is preserved as an integral part, a "moment" of the higher stage. Individual natures succumb in the rushing life-flood of this prodigious process, only to find a new and imperishable existence in the bosom of the whole. Thus the victory always remains with life, but the annihilation which victory incessantly demands is in its results appallingly tragical.

The rigorous application of this method engenders a thoroughly characteristic picture of reality. Not only is everything involved in flux, but all things are reciprocally concatenated, and everything individual and isolated acquires its just import and valuation only through its relations and connexions. Everywhere the condition of progress is conflict and struggle, never silent and peaceful growth. Life is here summoned to put forth its highest efforts and activities. Whatever seemed outward and partaking of the senses is now proved to be a mere phenomenon *of* mind *for* mind; nevermore can material ends be made the goal of conduct. Intellectual effort is thrown wholly upon its own resources and lifted utterly beyond the interests of the individual man and immediate psychical life; it is the action of a higher power, of purely intellectual and divine creating, that man experiences and feels in his individual life. But everything intellectual is concentrated in thought with its concepts. Therefore the problem is always to array the world's complexes under some broad, comprehending concept, to illuminate the whole domain with some *one* light-giving idea. These Ideas form the gist and motive power of history. It is true the work is distributed into many provinces, but they are all har-

moniously adjusted to one grand, comprehensive connexion, and appear as phases or stages of one truth. Thus all things are compressed and riveted together in a colossal intellectualisation of matter, the whole broad scope of life is cast in one mould. But over all the rushing haste of movement soars an all-comprehensive contemplation, and so the multitudinous press of existence is transformed into the quiescent calmness of a life under the form of eternity—*sub specie æternitatis.*

This process, in the first instance, is a matter of *intellectual* power, not of a *moral* frame of mind. But the moral element is far from lacking in it, being involved in absolute abandonment to the movement of the world-process, in the subjection of all subjective desire to the compulsion of objective truth. The Ideas make use of man even against his desire and knowledge; he is constrained to serve them as their instrument, even where he is pursuing his own ends and is desirous of satisfying only his own passions. "Passions mutually annihilate one another; reason alone is stirring, pursuing its own ends and asserting its own prerogatives." Making the Ideas one's personal will, *that* is morality; and "the great men of history are they who make their individual ends the substantial incarnation of what is the will of the world-mind."

The elaboration of this fundamental conception is not attended in all departments with equal facility. Nature remains a badly treated step-child, and also with the psychical life of the individual Hegel is able to accomplish little. His strength lies indisputably on the historical and sociological side, and there is nothing more characteristic of his thought than his close interweaving of the logical process with a comprehensive historical consideration of things.

The distinctest unfoldment of the view and method mentioned is to be found in his theory of the state. As an aggregate fabric of reason, as "the realising of the moral idea," the state stands high above individuals; it is not instituted to subserve their ends, but to unfold its own Idea as its highest self-constituted aim. The superiority of the whole to individuals does not prevent the holding of great individuals in high esteem. Hegel is thoroughly saturated

with the view that all great achievements in history and society are the performance of a few gifted individuals, and not the work of the striving masses. Yet these individuals are not isolated phenomena, they are engendered by their time and simply give clear expression to the obscure but irresistible endeavors of the community at large. In public opinion there are all things, both false and true. To find what is true is the office of the great man. He who gives this to his time who fulfils what it wants and struggles to express, is the great man of his time.

At the same time Hegel stoutly combats the wide-spread tendency to apply purely subjective criticism to the state and to dwell exclusively on the evils which under human conditions inevitably cling to it. On the contrary, we should, he holds, transport ourselves into the innermost life and heart of the whole and seek from this point of view to comprehend its many isolated expressions. As philosophical insight generally leads to reconciliation with reality, so, too, it must apprehend and represent the state as something consistently rational. And here the problem of all problems is to apprehend the rational as real and the real as rational. For it is as much the purpose of philosophical thought to engender the world as to understand it. A philosophy is nothing more than "its age comprehended in thought," and so it constitutes not the beginning but the conclusion of an epoch of civilisation. "As the thought of the world, it appears only after reality has completed and perfected its formational process. The owl of Minerva begins her flight only on the falling of the evening twilight."

Hegel, accordingly, taught the world to think more highly of the state, as also to commit to it greater and more arduous duties. Further, he applied his philosophical ideas with pertinacious insistence to the minuter structure of political relations. Everywhere in human society he discovers movement by thesis and antithesis towards synthesis, everywhere the operation of contradiction. So here the culmination of substantial, practical morality, whose expression the state is, is first reached through the stages of outward law and subjective morality. Thus Hegel understands punishment as the negation of the criminal's negation of the jural order. Thus

he recognises in love a resignation of individual existence and a regaining of new existence in the object of the love. So likewise, in violation of the general tendency of philosophy, he defended war as an indispensable instrument of the moral health of nations.

But the single state is not in Hegel's conception the conclusion of things; its ultimate mission is to be discharged into the ocean of the world's historical process. Some one people is always the chief vehicle of the growth of its time. Every civilised nation has its day. But it holds its vantage only for a brief time and then must deliver its torch to another. All the achievements of single nations and times serve but a single great purpose,—the development of mind to the consciousness of its freedom. In all building up and tearing down but one thing is fulfilled,—the self-discovery, the self-reversion of mind. To obtain this substantial freedom requires such great labor, for the reason that the mind is constantly reconcealing its own concept, and so is being constantly estranged from itself. Thus, "evolution which in nature is a silent outgrowth, in mind is a severe and unceasing struggle against self."

The manner in which the several epochs of civilisation compose chapters and stages of this universal historical movement has been set forth by Hegel with great power, but also with not a little violence, and has been brought down by him to the present time, in which he believes the victorious conclusion of the whole process is reached, the full self-consciousness of the mind attained. He closes with the joyous conviction: "The development of the principle of mind is the true theodicy, for it is the apprehension that the mind can free itself only in the element of mind, and that that which has come to pass and is coming to pass day in and day out, not only comes from God but is God's work itself."

The acme of intellectual life is found by Hegel in the realm of absolute mind, which he divides into the provinces of art, religion, and philosophy. The content of one and all is the same truth: the mind's discovery and possessing of itself through movement. Art shows this truth in the form of sensuous intuition, religion in the form of representation, philosophy in the form of the pure concept. Everywhere the intellectual content is paramount. In art the first

thing to be sought is the leading idea, and the history of art thus becomes a reflex of the intellectual movement. In religion the element of obscure feeling is emphatically rejected; the core is the thought; only when the thought is true is the feeling, too, of the right sort.

Here, accordingly, as there, the whole is peculiarly shaped by considerations of universal history, in which Hegel regards his own time as the acme and confluence of the grand world-movement as it progresses by contradiction. Hegel is enabled to give religion a characteristic content by the idea which penetrates his entire system, of the absorption of the individual in the intellectual process at large and of the new formation of man proceeding therefrom. He knows how to portray the life and operation of religion in powerful language. "In this region of the mind flow the Lethean floods in which Psyche quenches her burning thirst, in which she drowns her every sorrow, shapes the rough asperities and darkened sides of time to a mirrored dream, and transfigures them to the bright radiance of eternity." And religion withal is not a power from beyond, but a power here present with us and saturating all reality. "The reason of man, the consciousness of his being, is reason pure and simple; the divine in man and the mind, in so far as it is the mind of God, is not a mind beyond the stars, beyond the world, but God is present, everywhere present, and present as mind in all minds." Thus he hopes and speaks with primordial force. But whether this religion of the absolute intellectual process is identical with the Christian religion as Hegel asserts it is, is quite another question.

The highest summit is occupied by pure philosophy, the philosophy of knowledge as "mind knowing itself in the form of mind, or as comprehending knowledge." Pure philosophy is not something distinct from its history, but the movement of its history itself, its movement comprehended in unity and illuminated by thought. The doctrines of single philosophers are not the views and notions of mere individuals, but stages of one grand, continuous intellectual process. Everything here has its assured place, everything arises out of the whole and flows back again into the

whole. In the case of individual thinkers, their doctrines all conform to a single leading Idea, and only by such conformity can they attain their fullest value. The march of this movement is again subject to the law of contradiction, of upward movement by thesis and antithesis; here also struggle is the father of things. But the present forms the perfected and highest stage, considered from which all that has gone before is set in its proper light, and every isolated existence put in possession of its rights. The whole now appears "as a circle which returns into itself," which presupposes its beginning and reaches it only at the end." Thus only can the restless haste of its advance be transformed into the serenity and bliss of all-comprehensive contemplation.

III.

It needs but little study of Hegel's system to understand not only its powerful influence upon its time, but also its irresistible present attraction for sympathetic minds. The idea of a system unlimited in comprehension and shaping all departments of thought and life by the action of the same set of fundamental principles, operates in his philosophy with gigantic power; while its excessive condensation is exhibited by scarcely any other system. The kernel of Hegel's philosophy is extremely simple, yet the outgrowth from it is nowise lacking in luxuriance and variety. With all the rigor to which its elaboration as an entirety is subjected, every department yet seems to disclose its distinctive characteristics with perfect freedom and facility. A further striking feature is the idea of a universal reason, of a substantial truth absolutely independent of the opinions and volitions of the subject—a truth which proceeds in its development by dint of its own intrinsic necessity and according to its own intrinsic laws, and which lifts the mortals who obey it far above the pettiness of every-day life. Extremely fruitful, too, is the idea of an incessant onward movement of life, of the fluidity of all individual entities, and of their being conditioned by the flow of the whole. But most titanic of all, perhaps, is the doctrine, which no other thinker has advocated with the same vigor, that there can be no genuine progress without contradiction and strug-

gic, that negation is not obstruction, but rather an indispensable means of deepening life and of enhancing its process; that without the perturbing, goading power of contradiction life would lose its sap and sinews.[1] Nor is this a mere accompaniment, a sickly pallor cast upon scientific work, but a power permeating it to its very foundations and bestowing upon it sharply defined characteristics. On the other hand, amid all its abstractness, Hegel's views are not infrequently conveyed by means of glowing portrayals and fervent appeals to the senses. And so we opine that no one who will impartially and thoroughly surrender himself to the powerful influences of Hegel's system as a whole can possibly gainsay to him the title of a great and genuine philosopher. Nowhere is the dominant bent of our century for history and sociology so distinctly placed at the summit of philosophical thought as in the philosophy of Hegel.

But this does not signify that we are obliged to accept Hegel as our chief guide in modern philosophical investigation or that we can or should accept as definitive his work. Rigorous, unhampered criticism is nowise incompatible with recognition of transcendent intellectual power. Such criticism, however, should not carp from without at the results of the system before it, but should place itself at its centre and there put to the test its tenability as a whole. In this undertaking the important question arises whether the reality present to the philosopher's mind is mastered by his thought, whether the *intuition* and the *system* of the man are combined and form an inward unity. To this question we must emphatically answer no. With Hegel intuition is not merely the elaborating and visualising, the practical applying of the system, but it is characterised by a different and far richer and more substantial fundamental conception. The system, rigorously conceived, is panlogism—and panlogism not only in the sense of its seeking a thoroughgoing, logical concatenation of things, but panlogism in the absolute sense of asserting that thought alone, wholly by itself, and as the upshot of its own independent developmental movement, is the creator of all

[1] Compare on this point P. Carus on "The Problem of Good and Evil," in the July, 1896, number of *The Monist*, and the same writer's *Primer of Philosophy*, p 100 et seq.

existence. Reality here is nothing but the intellectual process, nothing but thought proceeding from itself and reverting into itself. "All the choir of heaven and the furniture of earth" is transmuted into a prodigious web of logical relations. Such self-sufficient thought can tolerate nothing beside itself. It must annihilate, perforce, all immediate intuition and feeling, all psychical inwardness, all ethical valuation; must destroy all the contents of life. Man is here converted outright into a mere tool of the logical process, and logically he should utterly dissolve therein, never again attaining living experience or command of the process through the agency of personality, and therefore never again being able to convert it into personal conviction and sentiment. Thus all human doing, all varied human movement in life would remain at bottom cold and empty; the soul would be wrested from the bosom of reality.

This tendency is unquestionably a marked feature of Hegel, but it is not all of Hegel. It is incessantly counteracted by the luxuriant intuition of a personality that belonged to a great epoch and had made his own the total fruits of the world's historical experience. Thus his convictions acquire enthusiasm from Christianity, which in his early theological studies at Tübingen had grown so familiar to him; so the riches of the whole golden age of German literature found embodiment in his philosophy of art; and so his political views were fructified by the conception of the modern civilised state. His profound grasp of the forces and causes acting at the foundation of history and society is the very feature, in fact, that distinguishes Hegel. Wherever a living visual grasp of reality is associated with intellectual creation, there Hegel's achievements have been great and have always borne fruit. On the other hand, even where such connexion has been established, we cannot deceive ourselves as to the fact that perfect inward unity does not exist. The contents of the system point beyond panlogism, yet without ever reaching, as contrasted therewith, their full development.

Particularly striking, again, is the limitation of Hegel's thought at points where his work seeks no connexion with intuition, as is the case in many branches of logic and psychology, and more espe-

cially so in the case of nature. For in these instances, where the method of construction by concepts is thrown entirely upon its own resources, Hegel often becomes formal, empty, and unendurable. His thoroughgoing contempt for experience is here mercilessly avenged. And if, despite its crushing failure in this regard, the presumption of the system, as being the end-all and be-all of research, is still doggedly persisted in, the violent opposition it has encountered is readily intelligible. It is now also luminously apparent how little the lever of pure conceptual effort can accomplish when it has no hold on substance, but hovers in the empty air.

The logical process proving powerless to comprehend the whole wealth of reality, and intuition and system having parted company, a second cardinal misgiving is produced by the attempt to convert all reality into a restlessly onward surging process, and at the same time to survey this process as a whole, to interpret it and make it part of our personal experience. That a contradiction inheres in this attempt is shown with special distinctness in Hegel's attitude towards history. Hegel demands here both a final conclusion and unceasing striving onwards. The immeasurability of the intellectual process is absolutely contradictory to cessation at a fixed point of time; the movement must continue forever. An unbounded future lies before us; the present is merely a link in an endless chain. In the logical elaboration of this idea every single age would be a transitional point only, and all valuation relative. By the law of contradiction, all truths and estimates of the present must perforce be reversed into their opposites. But Hegel will not dream of admitting these inevitable conclusions; if he accepted them, he would sacrifice the very essence of his system and give up all claim to speculative philosophy. The latter exactingly demands a survey of the movement as a whole, which would require withdrawal from the realm of becoming into that of a persisting existence, a removal into a kingdom of eternal truth. Were Hegel to give up such an ultimate conclusion and contemplation from the point of view of the whole, his philosophy would sink to a mere passing glimpse of a fleeting epoch of time and offer only an instantaneous photograph of reality.

There are asserted here, accordingly, two diametrically opposite tendencies, which stand unreconciled by the side of each other. On the one hand, we have a stabilism, which regards the developmental course of the world as terminated, which is turned irrevocably to the past and has not the slightest interest in the future; on the other hand, we have a radicalism which promises a constant renewal of life and holds out the constant possibility of catastrophes. In the mind of the master the conservative tendency prevailed, which resulted in a serene contemplation of things. With the disciples the radical tendency got the upper hand, and so Hegelianism became the main bulwark of the revolutionary movement of our century, and as such it is preserved to-day in social democracy, particularly in Germany.

IV.

The foregoing contradictions explain fully the different attitudes which men take towards Hegel, and the alternate attraction and repulsion which he exerts upon different minds. In its mother country the destiny of the system was determined by the fact that the final shaping of Hegel's philosophy coincided with a great crisis in the nation's life,—a crisis in which speculative and artistic pursuits were abandoned and men's energies turned to the solution of scientific and political problems, in which the philosophy of idealism was abandoned for that of realism. Previously to Hegel in Germany the interest of thinkers was dominated by questions relating to spiritual and mental culture. The worth and greatness of a man was measured solely by his participation in intellectual work. Instead of this, from about 1830 on, man as he actually exists, man as he is in flesh and blood, becomes more and more the ruling interest of life. The burning problems and tasks now spring from man's relations to his environment and to society; the world of speculation pales away, and is forced more and more into the background. Hegel's philosophy itself has been pressed into the service of this realistic movement, and at the same time forced, as above explained, into the relativistic and radical mould. Upon the whole, however, his philosophy has had to resign its primacy to the natu-

ral sciences. A scientific epoch begins its career of victory. And when philosophy actually did again secure an independent standing, it was the doctrine of Schopenhauer that first took possession of thinking minds.

And nothing is more characteristic of Schopenhauer's methods than their diametrical contrast to Hegel's philosophy. In Hegel we have the unfolding of the intellectual process with its endless concatenations; in Schopenhauer, abandonment to immediate feeling and intuition; in the former, intellectual life, powerful creating and shaping; in the latter, pure intuiting, luxuriant sentiment, and suffering; there, a pressing of all experience into the service of the positive and rational; here, an equally vigorous use of it in the service of the negative and irrational. Only very gradually was anything like an equilibrium of philosophical judgment restored in Germany, leading to Hegel's reinstatement in his rights and fame. But to readopt him outright was and is absolutely impossible, owing to the great inward revolutions and crises that have come upon the nation.

Quite different is the situation in English-speaking countries. The particular relations and complications of the German environment are lacking here. In these countries one can absorb and digest Hegel without misgivings. Under these circumstances it is quite intelligible that he should exert a powerful attraction. A newly aspiring intellectual life is strongly fascinated by the spirit which here operates, and is the more attracted to it by the fact that it finds in it a potent offset to many superficial and unproductive tendencies of the day. As contrasted with the distraction of modern life, one finds here unity and coherency, uniformity in all departments; as contrasted with the many varied sorts of dualism, one finds a robust monism; as contrasted with the languor of mysticism and pessimism, a joyful faith in the potency of reason, in reality, and in our ability to force our way through to it. Whereas now reflexion, self-contemplation, and subjective vanity are so prevalent, in Hegel everything personal and relating to self vanishes before the seriousness of labor. Finally, the transforming of life into thought and work is valiantly opposed to all kinds of utilitarianism. It is

thus the yearning for a deepening of life, for a more substantial content of thought which drives people to Hegel. In this sense we may salute Hegelianism in America with sympathy, and wish for it a constantly growing diffusion.

But it also appears here in its narrower conception, and with even more dogmatic assertion, and this excites criticism and opposition. Hegel's system is not infrequently treated as definitively conclusive. All the intellectual and ethical needs of man are ostensibly satisfied by it, and even to-day it is still supposed to dominate the movement of thought. All that is great and good in history is believed to be scientifically comprehended and condensed in Hegel. It is also asserted to be in full harmony with Christianity, as was recently asserted in an article in *The Monist*. If we accept the analysis given in the present article, we must not only look upon this as incorrect, but must say that it betrays an inaccurate conception of the great thinker. Hegel is in the first instance the philosopher of the absolute intellectual process. Even that in his philosophy which is not absorbed in this intellectual process receives from it a characteristic coloring. Contradiction must arise where men see more in reality than the incessant movement of unhampered thought, which derives its motive powers wholly from its own resources. What was said regarding the cleft between intuition and system and regarding the contradiction in the concept of the absolute process, applies to all the regenerated forms of Hegelianism. The multitudinous experiences which humanity has gained in science and life since the heyday of Hegel's philosophy, only render it more impossible for modern thought to readopt it in a modified form. Hegel's system is pure philosophical spiritualism. It can never allow independence or significance to sensuous existence; Hegel holds that "Nature is the theatre of infinite mind: nature exists only for man."

With such convictions his glance is absolutely restricted to terrestrial nature. The remaining celestial bodies seem hardly to exist for him. Here on earth reality seems to live out its existential rôle. All this is quite in harmony with an age which was so absolutely taken up with the life and creations of man that nature

filled merely the part of a background to the play. But how can such a conception be adhered to to-day, when nature has acquired so infinitely much more significance for us and life has been utterly transformed by our having revealed her laws and exploited her powers? Further, filled with his artistic conception of nature, Hegel looks upon the formation of natural life as a quiet, peaceful development; he makes organic creatures evolve from the bosom of nature as the bud from the blossom. Does not our having learned the import of the struggle for existence necessarily change the whole face of our world-conception? Finally, we stand in the midst of tremendous social complications, and daily have palpable proof of the prodigious potency of the outward conditions of life. With Hegel, on the contrary, the life and development of human beings is entirely dominated by spiritual, and pre-eminently by intellectual, factors.

And still another scruple is raised by panlogism of the Hegelian stripe, with its transforming of all reality into the movement of absolute thought. In the first place, to-day we have too modest an opinion of human powers to identify our thought thus quickly and lightly with absolute thought. We know that even under the most favorable circumstances and only by dint of hard labor and slow methods we can lift ourselves to the point where our thought is dominated by the unerring compulsion of truth. And again it is impossible for us to set ourselves so flippantly and rashly above the authority of experience as Hegel did, or, rather, fancied he did. For in truth Hegel himself incessantly drew from experience, and his system took on living form only through the assistance offered by this factor. How empty and hollow his performances are when his supposed absolute thought is drawing wholly from its own resources may be abundantly seen.

But the chief objection to Hegel springs from the circumstance that mind or spirit is more than intellect, and spiritual life broader than thought. In identifying spirituality with bare intellectuality, its full scope is not asserted. Inwardness, pure and simple, of psychic life, is suppressed. The intellectual powers violently displace the moral elements. The ideal in humanity is, with Hegel, not

free personality, but the spiritual, and, notably, the intellectually productive man; not the moral character in the sense of Kant, but the genius in the sense of an artistic, romantic world-view. We see that Hegel's system is not without its ethical element, yet this element is a mere appendage of intellectual activity, not the germ of a new and higher life. So, too, Hegel's religious teachings, when closely examined, are quite different from the conception of religion advanced by the great creeds of the world, and particularly by Christianity. The gist of religion is with him nothing but the absorption of the individual in the universal intellectual process. How such a conception can be identified with moral regeneration of the Christian stripe, with purification of the heart, is unintelligible to us. With Hegel, religion is at bottom but one, and that a lower, species of philosophy (the grasping of truth in the form of representation), and it is hard for it to assert by the side of philosophy anything like independence. Again, Hegel's religion is fundamentally different from the Christian as well as the Buddhistic, by the fact that it disposes of the problem of suffering in life in a manner altogether different from those religions. For just as his system of the absolute intellectual process, by positing a formal reason, a conformity to law, and a progressive movement in the All, totally converts reality into reason, so also it cherishes the belief that it has cleared up by the world's movement itself everything that is dark, and to have completely overcome all suffering. On the other hand, the bent of the system is here thoroughly optimistic and rationalistic. Participation in the civilising process appears to lift man above all cares and pains and appears to give to his life perfect and full contentment. But what necessity exists then to take refuge in religion at all, or to demand the opening up of a new world such as humanity heretofore has always expected of religion?

In short, in order to understand Hegel accurately in all his characteristic phases, one must also formulate his limitations, one must recognise the impossibility of going back unqualifiedly to his standpoint. In wishing, therefore, for a constantly increasing diffusion of the study of Hegel in America, we hope at the same time that the students of his philosophy will preserve their full inde-

pendence when under the master's sway, and not surrender themselves to blind subjection.

To adopt Hegel's system again to-day without qualifications, after so many tremendous revolutions in life, would be a thoroughly artificial restoration. And all such restorations, seeing that they subordinate their own time to one which is alien to it, are wont to be extremely unfruitful. Nor do they harmonise well with the deep-rooted conviction of thought, according to which all reality is an unceasing, onward-streaming of life. May the students of to-day, therefore, separate in Hegel the transitory from the intransitory, may they work out clearly and courageously those elements in his thought which are independent of his time and are calculated to further to-day the aspirations of high creative endeavor, and may they free themselves by searching criticism from everthing that was either at the beginning insufficient or has been proved by subsequent developments to be insufficient. It is the mark of all really great achievements and great men to be able to stand such winnowing, and, when everything has been rejected, to remain great still. And we believe that Hegel, too, can stand this test.

RUDOLPH EUCKEN.

JENA.

THE GENESIS OF SOCIAL "INTERESTS."

AS AN INTRODUCTION to what is to follow, I may be allowed to quote a passage from an earlier work[1] in which is given the theory of the rise of the notion of self, on which the point of the present slight paper rests.

"One of the most remarkable tendencies of the very young child in its responses to its environment is the tendency to recognise differences of personality. It responds to what I have called 'suggestions of personality.'. . . I think this distinction between persons and things, between agencies and objects, is the child's very first step toward a sense of the qualities which distinguish persons. The sense of uncertainty or lack of confidence grows stronger and stronger in its dealings with persons—an uncertainty contingent upon the moods, emotions, *nuances* of expression, and shades of treatment, of the persons around it. A person stands for a group of experiences quite unstable in its prophetic as it is in its historical meaning. This we may, for brevity of expression, assuming it to be first in order of development, call the '*projective* stage' in the growth of the personal consciousness, which is so important an element in social emotion.

"Further observation of children shows that the instrument of transition from such a 'projective' to a subjective sense of personality is the child's active bodily self, and the method of it is the principle of imitation. As a matter of fact, accommodation by actual muscular imitation does not arise in most children until about the seventh month, so utterly organic is the child before this, and so great is the impetus of its inherited instincts and tendencies. But when the organism is ripe, by reason of cerebral development, for the enlargement of its active range by new accommodations, then he begins to be dissatisfied with 'projects,' with contemplation, and so starts on his career of imitation. And of course he imitates persons. . . But it is only when a new kind of experience arises which we call effort—a set opposition to strain, stress, resistance, pain, an experience which arises, I think

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[1] *Mental Development in the Child and the Race: Methods and Processes* (Macmillan, 2d ed., 1895), pp. 335 ff.

first as imitative effort—that there comes that great line of cleavage in his experience which indicates the rise of volition, and which separates off the series now first really *subjective*. . . . The subject sense, then, is an actuating sense. What has formerly been 'projective' now becomes 'subjective.' The associates of other personal bodies, the attributes which made them different from things, are now attached to his own body with the further peculiarity of actuation. This we may call the *subjective* stage in the growth of the self-notion. . . . Again, it is easy to see what now happens. The child's subject sense goes out by a kind of return dialectic, which is really simply a second case of assimilation, to illuminate these other persons. The project of the earlier period is now lighted up, claimed, clothed on with the raiment of self-hood, by analogy with the subjective. The projective becomes *ejective;* that is, other people's bodies, says the child to himself, have experiences *in them* such as mine has. They are also *me's:* let them be assimilated to my *me* copy. This is the third stage; the *ejective*, or 'social' self, is born.

"The *ego* and the *alter* are thus born together. Both are crude and unreflective, largely organic, an aggregate of sensations, prime among which are efforts pushes, strains, physical pleasures and pains. And the two get purified and clarified together by this twofold reaction between project and subject, and between subject and eject. My sense of myself grows by imitation of you, and my sense of yourself grows in terms of my sense of myself. Both *ego* and *alter* are thus essentially social; each is a *vacuus*, and each is an imitative creation. So for a long time the child's sense of self includes too much. The circumference of the notion is too wide. It includes the infant's mother, and little brother, and nurse, in a literal sense; for they are what he thinks of and aims to act like by imitating, when he thinks of himself. To be separated from his mother is to lose a part of himself, as much so as to be separated from a hand or foot. And he is dependent for his growth directly upon these suggestions which come in for imitation from his personal *milieu*."

The outcome serves to afford a point of departure for the view which we may entertain of the person as he appears to himself in society. If it be true, as all the evidence goes to show, that what the person thinks of himself is a pole or terminus at one end of an opposition in the sense of personality generally, and that the other pole or terminus is the thought he has of the other person, the alter, then it is impossible to take his thought of himself at any time and say that in thinking of himself he is not essentially thinking of the alter also.[1] What he calls himself now is in large measure an in-

[1] In isolating the "thought elements" in the self, I do not, of course, deny the organic sensation and feeling elements; but, from the social point of view, the latter are unavailing.

corporation of elements that at an earlier period of his thought of personality, he called some one else. The acts now possible to himself, and so used by him to describe himself in thought to himself, were formerly only possible to the other; but by imitating that other he has brought them over to the opposite pole, and found them applicable with a richer meaning, and a modified value, as true predicates of himself also. If he thinks of himself in any particular past time, he can single out what was then he, as opposed to what has since become he; and the residue, the part of him that has since become he, that was then only thought of—if it was thought of as an attribute of personality at all—as attaching to some one whom he was acquainted with. For example, last year I thought of my friend W. as a man who had great skill on the bicycle and who wrote readily on the typewriter; my sense of his personality included these accomplishments, in what I have called a "projective" way. My sense of myself did not have these elements, except as my thought of my normal capacity to acquire delicate movements was comprehensive. But now, this year, I have learned to do both these things. I have taken the elements of W's personality formerly recognised, and by imitative learning, brought them over to myself. I now think of myself as one who rides a "wheel" and writes on a "machine." But I am able to think of myself thus only as my thought includes, in a way now called "subjective," the personal accomplishments of W., and with him of the more or less generalised alter which in this illustration we have taken him to stand for. So the truth we now learn is this: that each and all of the particular marks which I now call mine, when I think of myself, has had just this origin; I have first found it in my social environment, and by reason of my social and imitative disposition, have transferred it to myself by trying to act as if it were true of me, and so coming to find out that it is true of me. And further, all the things I hope to learn, to acquire, to become, all—if I think of them in a way to have any clear thought of my possible future—are now, before I acquire them, simply elements of my thought of others, of the social alter, or of what considered generally we may call the "socius."

But we should also note that what has been said of the one pole of this dialectical relation, the pole of self, is equally true of the other also—the pole represented by the other person, the alter. What do I have in mind when I think of him as a person? Evidently I must construe him, a person, in terms of what I think of myself, the only person whom I know in the intimate way we call "subjective." I cannot say that my thought of my friend W. is exhausted by the movements of wheel-riding or typewriting; nor of any collection of such acts, considered for themselves. Back of it all there is the attribution of the very fact of subjectivity which I have myself. And the subjectivity of him—it is just like that of me, to the degree to which I have any picture of it at all. I constantly enrich the actions which were at first his alone, and then became mine by imitation of him, with the meaning, the rich subjective value, the interpretation in terms of private ownership, which my appropriation of them in the first instance from him, has enabled me to make. So my thought of any other man—or all other men—is, to the richest degree, that which I understand of myself, together with the uncertainties of interpretation which my further knowledge of his acts enables me to conjecture. I think him rational, emotional, volitional, as I am; and the details of his more special characteristics, as far as I understand them at all, I weave out of possible actions of my own, when circumstances call me out in similar ways. But there is always the sense that there is more to understand about him; for as we have seen, he constantly, by the diversities between us which I do not yet comprehend, sets me new actions to imitate for my own growth.

So the dialectic may be read thus: my thought of self is in the main, as to its character as a personal self, filled up with my thought of others, distributed variously as individuals; and my thought of others, as persons, is mainly filled up with myself. In other words, but for certain minor distinctions in the filling, and for certain compelling distinctions between that which is immediate and that which is objective, the self and the alter are to our thought one and the same thing.

I do not care in this connexion to track out the distinction between the subjective or immediate, and the objective; nor to ask what it is that sets the bounds in fact to the person. What concerns us is independent of these inquiries, having to do with the question: What is in consciousness when one thinks of himself or of another person? This, it is evident, is a sufficient introduction to a number of questions of high social import; for we may ask: When a man asserts himself, what is it that he really asserts? When he sympathises with another, what exactly is that "other"? And how do all the emotions, and desires, and mental movements of whatever kind which pass through his consciousness involve others who are in social connexion with him? I claim, indeed, that it is just this kind of inquiries that most concern the social theorist just now, and with him the political thinker; and the vagueness and cross-firing which prevail in some of the discussions of these men are due in great part to inadequate understanding of the psychological concepts which they use.

To get such inquiries down to a psychological basis, the first requisite is to be reached in the concept of the person. Not the person as we look at him in action, alone, or chiefly; but the person as he thinks of himself. We constantly presume to tell him what his chief end is, what as an individual he most desires, what his selfish nature urges him to, and what self-sacrifices he is willing to make in this circumstance or that. We endeavor to reach a theory of "value" based on a calculus of the desire of one individual to gratify his individual wants, multiplied into the number of such individuals. Or we take a group of individuals together as we find them in society and ask how it is that these individuals could have come together. All this without so much as consulting the single person psychologically as to the view he has of his own social life, his opportunities, and his obligations! The average individual would be "scared" within an inch of his life if he were for a moment obliged to put up with the kind of existence which such theorists assume him to live; and he would be paralysed into permanent inertia if he had to effect by his conscious efforts what they teach us he works out. Even the later psychological sociologists, as notably M. Tarde,

treat "beliefs" and "desires" as ultimate self-existent things apart from the content of thought to which they are functionally attached.

To bring our development of the sense of personality, therefore, into view of these questions, let us attack one of the main points in the theory of society which recent discussion has tended to formulate. This point is that which concerns the "interests" of the individual. What are the interests of the individual, and how do they stand related to the interests of the community, state, social group, in which the individual lives?

Popularly, a man's interests are those aspects of possible fortune which are best for him. What is thus best for him is in the main what he wants; but the two classes are not always identical. Yet for the sake of making our point more secure in the sequel, suppose we begin by defining a man's interest as that which he wants, and is willing to put forth some endeavor to obtain. Then let us see how this tends to involve the man's self, and the selves of those who are associated with him.

If the analysis given above be true, then what a man thinks of as himself, is in large measure identical with what he thinks of as another, or the others in general. So the projection of the thought of "person," which, when looked at subjectively, he calls "my self," into an "other,"—this qualifies that other to be clothed on with all the further predicates found to attach to the self. The so-called love of self, it is evident, is such a predicate; it is a description of the attitude which the man takes to himself,—a kind of reaction of part of his nature upon another part. When he is proud, it is because the qualities by which he represents himself to himself are such that they arouse his approbation. When he thinks, therefore, of the other in terms of the same predicates, he has to react to a degree with the same sense of approval.

When, likewise, I go farther in thought and say that, being such and such a person, it is my interest to have such or such a fate, I must *perforce*—that is, by the very same mental movement which gives the outcome in my own case—attribute to him the same deserts and the same fate. Viewed psychologically, we should say that the predicate is a function of the content which we call self,

and that, so far as the content is the same, the predicate must be the same. But this sense of equal interest, desert, because of identical position in the evolution of selves, what is this but the sense of justice in the abstract, and in the concrete, the feeling of sympathy with the other? The very concept of interests, when one considers it with reference to himself, necessarily involves others, therefore, on very much the same footing as himself. His interests, the things he wants in life, are the things which, by the very same thought, he allows others, also, the right to want; and if he insists upon the gratification of his own wants at the expense of the legitimate wants of the "other," then he in so far does violence to his sympathies and to his sense of justice. And this in turn must impair his satisfaction. For the very gratification of himself thus secured must, if it be accompanied with any reflexion at all, involve the sense of the other's gratification also; and since this conflicts with the fact, a degree of discomfort must arise in mind varying with the development which the self has attained in the dialectical process which has been described.

Or suppose we look at the case a little differently. Let us say that the sense of self always involves the sense of the other. And this sense of the other is but that of another "self," where the word self is equivalent to myself, and the meaning of the word "other" is the only thing that prevents it from being myself. Now my point is that whatever I fancy, hope, fear, desire for self in general, with no qualification as to which self it is, remains the same whether afterwards I do qualify it by the word "my" or by the word "other." Psychologically there is a great mass of motor attitudes and reactive expressions which become conscious as emotion and desire, common to the self-thought everywhere.

This is true just in so far as there is a certain typical other self whose relation to me has been that of social give and take by which the whole development of a sense of self of any kind has been made possible. And we find certain distinctions at different stages of the development which serve to throw the general idea of the social relationship into clearer light.

Let us look at the life of the child with especial view to his at-

titudes to those around him; taking the most common case, that of a child in a family of children. We find that such a child shows, in the very first stages of his sense of himself as a being of rights, duties, etc., a very organic nature. He is occupied mainly with the business of learning about himself, other people, and nature. He imitates everything, being a veritable copying-machine. He spends the time not given to imitating others very largely in practising what he has picked up by his imitations, and in the exploiting of these accomplishments. His two dominating characteristics are a certain slavishness, on the one hand, in following all examples set around him; and then, on the other hand, a certain bold aggressiveness, inventiveness, a showing-off, in the use he makes of the things he learns.

But it does not take very extended observation to convince us that this difference in his attitudes is not a contradiction; that the attitudes themselves really terminate upon different thoughts of self. The child imitates his elders, not from choice, but from his need of adaptation to the environment; for it is his elders who know more than he does, and who act in more complex ways. But he is seldom aggressive toward his elders—that is, toward those who have the character of command, direction, and authority over him. His aggressions are directed mainly toward his brothers and sisters; and even as toward them, he shows very striking discriminative selection of those upon whom it is safe to aggress. In short, it is plain that the difference in attitude really indicates differences in his thought corresponding to differences in the elements of the child's social environment. We may suppose the persons about him divided roughly into two classes: those he learns from, and those he practises on; and then we see that his actions are accounted for as adaptations in his personal development.

The facts covered by this distinction—probably the first general social distinction in the child's career—are extremely interesting. The stern father of the family is at the extreme end of the class he reveres with a shading of fear; the little brother and sister stand at the other extreme; they are the fitting instruments of his aggression, the practise of his strength, the assertion of his agency

and importance. The mother usually, it seems, stands midway, serving to unite the two aspects of persons in the youngster's mind. And it is pretty clear, when the case is closely studied, that the child has, as it were, two thoughts of his mother—two mothers, according as she on occasion falls into one or the other of these classes. He learns when, in what circumstances, she will suffer him to assert himself, and when she will require him to be docile and teachable. And although she is for the most part a teacher and example, yet on occasion he takes liberties with the teacher.

Now what does this mean, this sorting out, so to speak, of the persons of the family? It means a great deal when looked at in the light of the "dialectical movement" in the development of personality. And I may state my interpretation of it at the outset.

The child's sense of himself is, as we have seen, one pole of a relation; and which pole it is to be, depends on the particular relation which the other pole, over which the child has no control, calls on it to be. If the other person involved presents uncertain, ominous, dominating, instructive, features, or novel imitative features, then the self is "subject" over against what is "projective." He recognises new elements of personal suggestion not yet accommodated to. His consciousness is in the learning attitude; he imitates, he serves, he trembles, he is a slave. But on the other hand, there are persons to whom his attitude has a right to be different. In the case of these the dialectic has gone farther. He has mastered all their features, he can do himself what they do, he anticipates no new developments in his intercourse with them; so he "ejects" them, as the psychological expression is; for an "eject" is a person whose consciousness has only those elements in it which the individual who thinks of that consciousness is able, out of his own store of experience, to read into it. It is ejective to him, for he makes it what he will, in a sense. Now this is what the brothers and sisters, notably the younger ones, are to our youthful hero. They are his "ejects"; he knows them by heart, they have no thoughts, they do no deeds, that he could not have read into them by anticipation. So he despises them, practises his superior activities on them, tramples them under foot.

Now at this earliest stage in his unconscious classification of the elements of his personal world, it is clear that any attempt to describe the child's interests—the things which he wants, as we have agreed to define "interests"—as selfish, generous, or as falling in any category of developed social significance, is quite beside the mark. If we say that to be selfish is to try to get all the personal gratification possible, we find that he does this only part of the time; and even on these occasions, not because he has any conscious preference for that style of conduct, but merely because his consciousness is then filled with the particular forms of personal relationship—the presence of his little sister, etc.—which normally issue in the more habitual actions which are aggressive, in our advanced social terminology. His action is only the motor side of a certain collection of elements. He acts that way, then, simply because it is natural for him to practise the functions which he has found useful. We see that it is natural; and on the basis of its naturalness, call him selfish by nature.

But that this is arguing beyond our facts—really arguing on the strength of the psychological ignorance of our hearers, and our own—is clear when we turn the child about and bring him into the presence of the other class of persons to whom we have seen him taking up a special attitude. We have but to observe him in the presence of his father (generally), or any one else whom he habitually imitates and learns the lessons of life from, to find out that he is just as pre-eminently social, docile, accommodating, centred-outwardly, so to speak, as before we considered him unsocial, aggressive, and self-centred. If we saw him only in these latter circumstances, we would say possibly that he was by nature altruistic, most responsive to generous suggestion, teachable in the extreme. But here the limitation is the same as in the former case. He is not altruistic in any high social sense, nor consciously yielding to suggestions of response which require the repression of his selfishness. As a matter of fact, he is simply acting himself out; and in just the same natural way as on the occasion of his apparent selfishness. But it is now a different self which is acting itself out. The self is now at the receptive pole. It is made up of elements which

are inadequate to a translation of the alter at the other pole of the social relation now established. The child's sense of self is not now of a relatively completed self in relation to the alter before him; it was that in the earlier case, and the aggression which he was then guilty of showed as much. Now he feels his lack of adequate means of response to the personality before him. He can not anticipate what the father will do next, how long approbation will smile upon him, what the reasons are for the changes in the alter-personality. So it is but to state a psychological truism to say that his conduct will be different in this case. Yet from the fact that the self of this social state is also in a measure a regular pole of the dialectic of personal growth, it will tempt the observer to classify the whole child, on the strength of this one attitude, in some one category of social and political description.

I do not see, in short, how the nature of this child can be expressed in any but social terms; nor how, on the other hand, social terms can get any content of value but from the understanding of the developing individual. This is a circle of definition, of course; and that is just my point. On the one hand, we can get no doctrine of society but by getting the psychology of the "socius" with all his natural history; and on the other hand, we can get no true view of the socius at any time without describing the social conditions under which he normally lives, with the history of their action and reaction upon him. Or to put the outcome in the terms of the restriction which we have imposed upon ourselves,—the only way to get a solid basis for social doctrine based upon human want or desire, is to work out first a descriptive and genetic psychology of desire in its social aspects; and on the other hand, the only way to get an adequate psychological view of the rise and development of desire in its social aspects, is by a patient tracing of the conditions of social environment which the child and the race have lived in and have grown up to reflect.

But the observation of the child shows us that we may carry our discrimination of his personal attitudes farther along the same lines. We have found him classifying his companions and associates by the shadings of conduct which his spontaneous adaptations

of himself show; yielding to some and studying them mainly by imitation, abusing others and asserting himself against them aggressively. This distinction gets a wider development as his experience goes on accumulating. As was hinted in the case of his attitude to his mother, that one person comes to have for him the force of several, or of both of the two great classes of persons. Sometimes he tyrannises over his mother and finds her helpless; at other times he finds her far from submitting to tyranny, and then he takes the rôle of learner and obedient boy. Now the further advance which he makes in this general sense of the social situation as a whole, is in the line of carrying this same adaptability of attitude into his relation to each of the persons whom he knows. Just as he himself is sometimes one person and again another, sometimes the learner, the altruist, the unselfish pupil, and then again the egoist, the selfish aggressor; so he continues the dialectical process by making this also "ejective" to him. He reads the same possibility of personal variation back into the alter also. He comes to say to himself in effect: he, my father, has his moods just as I have. He, no less than I, cannot be adequately considered all-suffering or all-conquering. Sometimes he also is at one pole of the self-dialectic, sometimes at the other. And so is my mother, and my brother and sister, as they grow older,—indeed, so are all men.

So it then becomes his business not to classify persons, but to classify actions. He sees that any person may, with some few exceptions, act in either way: any person may be his teacher or his slave, on occasion. So his next step in social adaptation is his adaptation to *occasions*,—the group of social conditions in which one or the other class of actions may be anticipated from people generally. And he makes great rough classes in which to put his "ejects"—his read-out personalities about him—according to his expectations of treatment from them. He learns the signs of wrath, of good humor, of sorrow, of joy, hope, love, jealousy, giving them the added interpretation all the time which his own imitation of them enables him to make by realising what they mean in his own experience. And so he gets himself equipped with that extraordinary facility of transition from one attitude to another in his re-

sponses to those about him, which all who are familiar with children will have remarked.

Now all these changes have meaning only as we realise the fact of the social dialectic, which is the same through it all. There are changes of attitude simply and only because, as the psychologist would express it, there are changes in the content of his sense of self. In more popular terms: he changes his attitude in each case because the thing called another, the alter, changes. His father is his object; and the object is the "father," *as the child thinks him*, on this occasion and under these circumstances, *right out of his own consciousness*. The father-thought is a part of the child's present social situation; and this situation in the child's mind issues in the attitude which is appropriate to it. If it be the father in wrath, the situation produces such a father out of the child's available social thought-material; and the presence of the combination in the child's mind itself issues in the docile, fearful attitude. But if it then turn into the jovial father, the child does not then reverse his attitude of himself. No, the father-thought is now a different father-thought, and of itself issues in the child's attitude of playful aggression, rebellion, or disobedience. The growing child is able to think of self in varying terms as varying social situations impress themselves upon him; so these varying thoughts of self, when made real in the persons of others, call out, by the regular process of motor discharge, each its own appropriate attitude.

But see in this more subtle give and take of elements, for the building up of the social sense, how inextricably interwoven the ego and the alter really are! The development of the child's personality could not go on at all without the constant modification of his sense of himself by suggestions from others. So he himself, at every stage, is really in part someone else, even in his own thought of himself. And then the attempt to get the alter stript from elements contributed directly from his present thought of himself is equally futile. He thinks of the other, the alter, as his *socius*, just as he thinks of himself as the other's *socius*: and the only thing that remains more or less stable, in the midst of the whole growth, is

the fact that there is a growing sense of self which includes both terms, the ego and the alter.

In short, *the real self is the social self, the socius.*

And if we think it worth while again to raise the question as to what such a self pursues when, as we say, he identifies his interests with his wants, the answer is just as before. The growing subtlety of the dialectical process has not changed the values which the elements represent to the child. What he wants in each circumstance is expressed by his attitude in that circumstance; and it changes with the circumstance. He is now a creature of burning self-assertion, eager to kill and destroy in all God's holy mountain; and presto! change, he is now the lion lying down beside the lamb. His wants are not at all consistent. They are in every case the outcome of the social situation; and it is absurd to endeavor to express the entire body of his wants as a fixed quantity under such a term of description as "selfish," "generous," or other, which has reference to one of the various situations only.

So far, therefore, in our search for a definition of the "interests" of the individual, in relation to his social environment, we find a certain outcome. His wants are a function of the social situation as a whole. The social influences which are working in upon him are potent to modify his wants, no less than are the innate tendencies of his personal nature to issue in such wants. The character which he shows actively at any time is due to these two factors in union. One of them is no more himself than the other. He is the outcome of "habit" and "suggestion," as psychology would say in its desire to express everything by single words. Social suggestion is the sum of the social influences which he takes in and incorporates in himself when he is in the receptive, imitative, attitude to the alter; habit is the body of formed material, already cast in the mold of a self, which he brings up for self-assertion and aggression, when he stands at the other pole of the relation to the alter, and exhibits himself as a bully, a tyrant, or at least, as master of his own conduct. Of course, heredity or "endowment" is on this side. And the social unit of desire, as far as the individual is taken as the measure of it, in any society, is the individual's rela-

tively fixed conduct, considered as reflecting the current social modes of life.

It is easy to discern in the behavior of the child from about five years old, the blending of these two influences. Two children in the same family will differ possibly by all the width of the distinction current in psychology by the terms "sensory *versus* motor" in their types or dispositions; and yet we may see in them the influence of the common environment. One acts at once on the example of the father; the other reflects upon it, seems to understand it, and then finally acts upon what he thinks it means. The motor child learns by acting; the sensory child learns and tests his learning by subsequent action. But both end by getting the father's essential conduct learned. Both modify the thought of self by the new elements drawn from the father; and act out the new self thus created: but each shows the elements differently interpreted in a synthesis with the former character which he had.

Or take the same process of incorporating elements of social suggestion as they are absorbed respectively by a boy and a girl of about the same age. The differences of sex is a real and fundamental difference, on the side of what is called "endowment"; so we should expect that the same social suggestions given them would be taken up differently by them, and show different interpretations when the child of one sex or the other comes to act upon them. The boy is generally more aggressive, more prone to fall into the self-pole of high confidence in his abilities. And we find him refusing certain forms of suggestion—say those coming from a female nurse—which the female child readily responds to. Furthermore, the boy is capable, just for the same reason, of standing up to the rougher elements of his social *milieu* which only frighten and paralyse his sister. And when the same suggestion is given to the boy and girl together, the former is likely to use it wherewith to exercise himself upon animals, etc., while the girl is more likely to use the new act strictly in an imitative way, repeating the actual conduct of others.[1]

[1] Of course, we can only say "more likely" in each instance, and in the other distinctions between them as well.

But apart from the attempt to reduce these active interpretations to general classes, it is enough here to point out the extraordinary variety which the same suggestions take on in the active interpretations by different children; and to point out with it the need of recognising the fact that in this interpretation by the child there is always the fusion of the old self with the new elements coming in from the selves external to it. Every conscious interpretation of human action is, I think, of this essential kind. We think the deeds of others as we bring ourselves up to the performance of similar deeds; and we do the deeds of others only as we ourselves are able to think them. In the case of the young child in the family, we may often tell how far he is learning correctly, and the particular alter from whom he has taken his lesson. But in the larger social whole of adult life both elements are so complex—the solidified self of the individual's history is so fixed, and the social suggestions of the community are so varied and conflicting—that the outcome of the fusion is a thing that no man can prophesy.

So much for the individual child and his growing social personality. We see in a measure what his interests are—that is, what elements go to make his interests up. Let us now turn to the rest of the family in which he lives and briefly state the same inquiry in respect to them. Do the interests of the family conflict with his?

Waiving the inquiry into the interests of the family group as a whole, that is, the question of objective interests apart from actual want or desire (as we did in the earlier case), our question now is about this: what can be said of the wants of the other individuals of the family in which the young hero, whose life we have so far described, lives and exploits himself? This seems to be answered, certainly in part, by the consideration that they have each been through the same process of growth in securing the notion of self, both the ego-self and the alter-self, that he has. Each has been a child. Each has imitated some persons and assaulted others. So, of course, of the other members of the flock of children in the family; for they are the very specimens of the alter which have furnished to the hero his "socii" all the way through. So we have only to make them one by one hero in turn to see that then all the

others becomes socii; and the group development replaces the individual development. Even the parents are in great measure capable of the same interpretation; since they have furnished the largest amount of personal suggestion to all the children: and the children, in imitating one another, aggressing upon one another, etc., are really perpetuating the features of social life which characterise the parents' life. No family, of course, lives in such isolation as to be in any sense obliged to support itself upon its own social stock from one generation to another; and there is the further modifying influence of the peculiar interpretation given to his social suggestions by each child, spoken of above.[1] But apart from the personal form in which the family suggestions are worked over by each child, we may say that the material of the social life of the family is largely common stock for all the members of the family.

This means that the alter to each ego is the same self as the ego; and that what has been said of the wants of the ego being not egoistic in the selfish sense, nor generous in the altruistic sense, but general in the social sense, holds of the family group as a whole. What each child wants for himself, he wants more or less consciously for each member of his family. While he may assault his brother, viewing him as an alter to practise on in certain circumstances, how soon he turns in his defence in the presence of the alter foreign to them both, when the larger social ego of them both swells within his breast! What boy among boys, what school-fellow among his companions, what Rob-Roy surrounded by the clan has not felt the socius, the common self of the group, come in to drive out the narrower ego of his life within the group? This is not to say that the interests of the group may not be more clearly seen by one member than by others, nor that direct conflicts may not arise in which some one ego will refuse to yield to the demands of the socius of the group. Those things may well be, and are. To say the contrary would be to say that the development of all the individuals was equal. For if each has his ego and his alter only by the assimilation of suggestions, then the amount of assimilation, of progres-

[1] The degree of "originality" or "invention," which each child shows.

sive learning of the possibilities and relationships of conduct must indicate what the sense of social good is to him. His insistence on his interpretation, however, is no more egoistic and selfish than is the insistence by the other members of the family on a different line of conduct. His double self, giving the socius, is in advance of theirs, but it arises in just the same way; and it is just his social nature which compels him to fight for what seems to be a private and selfish interest.

Apart from the apparent exceptions—not really such—now noted, we may say, therefore, that the interests of the family group are reflected in the wants of each member of the group. Hatred of society in this primitive family form of it, is pathological,—if indeed it be possible. Nothing but an upheaval of the foundations of personality can eradicate the sense of social solidarity in every child in a family. And the ultimate sanction for family life and its only permanent safeguard is here. No legal provisions could have originated it, no personal conventions advanced it, nor can it be endangered by foes from without. Nothing but the kind of suggestion in education which would replace the sort of socius represented in the family, by another sort, through the same process of identification of the self with its alter all the way through the history of the growth of personality, could affect it materially one way or the other.

Moreover, it is just this fact of identity of personal and family interests which is responsible for the rise of the family considered from an evolution point of view. Animal families, if they are to survive as families, must be made up of individuals having ingrained in their instinctive life the social qualities which make the animal's own struggle for existence at once also a struggle for the existence of the family group as such. So the child, in his personal growth, must become a person by becoming a socius. To separate the two is to annihilate the individual person: just as to eradicate the family instinct in the animal is to destroy his private chance for survival, or if not that, at least to prevent the raising, and perhaps the very begetting, of a second generation.

To trace the matter farther in the wider fields of social life would take us beyond our present limits. J. MARK BALDWIN.

SOME POINTS IN INTRACRANIAL PHYSICS.

IT IS NOT only in discussing the phenomena of mind that the use of metaphysical terms is not merely convenient but imperative. To impute personality to objects, and when abstract notions have been formed to regard these as representing entities,—to endow them with the attributes, passions, powers we ascribe to persons,—are among the earliest efforts of the nascent intelligence. The most highly-trained intellect still finds it convenient to adopt the same plan, and in certain directions finds it difficult to improve on it.

In the development of mind, impression is the first stimulant of consciousness; appearance—color or form—is the earliest recognition of an impressing agent; variety and movement are among the first perceptions. Control over certain movements of the body, as in grasping, pushing, pulling, gives an instinctive notion of power; and the idea of power, once got hold of, dominates our interpretation of every appearance and movement.

It is characteristic of the rational mind that it must seek for causes, and if need be, invent them. It is not content, for example, to describe a feeling, and to say a body *is heavy*; it desires a reason and says it *has weight*. Wherever work is done the presence of a working agent—of a something that can exert power—is inferred. Such words as "nature," "life," attraction," are constantly on the lips and are regarded as workers. They are spoken of as if endowed with Will, and as acting with an end in view. An anthropomorphic tendency or mode of expression will thus obtrude itself, whether an attempt is made to explain the rolling of a billiard ball, or to fathom the mystery of a first cause.

No term in the language is more wide-reaching in its application—none is more metaphysical—than the word Energy. It refers to the most generalised concept that has yet been given to account for the behavior of matter. It is the central *genus* round which cluster gravity and cohesion, heat, affinity, and other *species*. No appearance—no physical change in the material universe—can be interpreted without the assistance of one or several of its forms. It is the potential of all existence, of all experience, of all force. It is

> "A spirit of activity and life
> That knows no term, cessation, or decay;
> . . . . . .
> But, active, steadfast, and eternal, still
> Guides the fierce whirlwind, in the tempest roars,
> Cheers in the day, breathes in the balmy groves,
> Strengthens in health and poisons in disease."[1]

If we attempt to define with precision what energy is "in itself" we must simply move in a circle. We are told it is "the power of doing work." But what is power? Another metaphysical word. It is energy in efficient relation to some definite end, and work is evidence of energy spent. In short, energy is an interpretation—an imputed virtue—an article in the creed of scientific faith—a something that satisfies the reason in trying to account for work done.

As a simple fact of existence, however, matter and energy are one and indissoluble. The necessities of language may require their separation in thought, but what we can alone investigate is the behavior of matter. That which gravitates or is heavy is a material body; the atoms that clash together or fly asunder in the play of chemical affinity are solid[2]; it is the commotion of molecules that communicates the feeling of heat; if the ray of light fail to meet and to agitate material particles it remains "darkness visible." We may talk of inertia but cannot conceive of matter being

[1] Shelly.—The whole of the apostrophe to the "Spirit of Nature" in *Queen Mab* reads like a rhapsody on the doctrine of the conservation of energy.

[2] It would not affect the argument if atoms are "small, soft, flexible, or liquid masses."

absolutely *inert*. If it has form—if it occupy space—it must have properties. When acted on it will react; when put in motion it may communicate motion.

Energy doing work becomes force. Force implies motion and has its origin in disturbed equilibrium—in a difference of degree or kind or position.

It is no part of our plan to enlarge on the various kinds of energy or their modes of working. We must, however, glance shortly at some of the characteristics of energy as manifested in organised structures.

Life is a great worker, but it is rather a cluster of energies than by itself a specific form. It is often spoken of as—and, indeed, believed by some to be—an agent which can compel or control motion in opposition to ordinary physical laws. As weight, however, is not something added to bodies, but is implied in the very constitution or concept of matter, so life is simply evidence that several kinds of energy are so co-ordinated that they work in harmony towards one end. The instruments are so small, the motions so subtle, the lines of force so mixed, that it may be impossible to trace all the individual links in the combination and sequence of changes. But science, like theology, has its articles of faith, and one of these is that no break in the continuity of motion can possibly occur.

The solution of the problem lies in the subtle but powerful nature of molecular energy. Capillary attraction, osmosis, chemical affinity, heat, and other physical agencies act each in its own mode. They thus promote the movement and development of protoplasm in the cell, stimulate the growth of tissues, and condition the exercise of function. The force at individual points may be infinitesimally small, but, acting at innumerable centres and through myriads of lines of action, it may be used to so much advantage that, like the impulse from a piston in the hydraulic press, its effects may be great and far reaching. In time these are shown in the formation of large structures or powerful instruments. "As we "look at the roots of a mighty tree, it appears to us as if they had "forced themselves with giant violence into the solid earth. But "it is not so; they were led on gently, cell added to cell, softly as

"the dews descended and the loosened earth made way. Once "formed, indeed, they expand with enormous power, but the spongy "condition of the growing radicles utterly forbids the supposition "that they are forced into the earth."[1]

A necessary condition of the development of growing structures is a certain amount of physical restraint. This moulds form and determines the direction of growth. Even in the simplest cell the diffusion of fluids and the movement of granules require the restraint of the cell wall. Without such limiting influence the speck of protoplasm would be speedily resolved into amorphous matter. Under repression the growth or multiplication of cells gives rise to expansive pressure. This, if met by opposing pressure, reacts on the molecules themselves and leads to tension—to an improved adjustment—to storage of energy. The tension becomes a force which, as in the bud, the seed, the egg, can compel firm envelopes to give way, and thus the growth of structure is allowed to proceed in the direction of least resistance.

"Development, then, is due to increase under limit; it is de- "termined by resistance. Is it not self-evident? Conceive of an "ovum germinating with all other circumstances unaltered, but "with no external limitations, no membranes, no uterus, nothing "to check expansion in any form. Could anything else result but "a shapeless multitude of cells?"[2] The bearing of all this on intracranial physics will be seen immediately.

The skull may be regarded as a gigantic cell in whose interior the play of various kinds of energy is powerful and unceasing. It is unnecessary here to enlarge upon it as an organ of protection. Its qualities in this respect speak for themselves. We have simply to handle it—to notice that by their configuration and texture its walls are so constructed as to ensure in the most economical manner lightness, strength, and elasticity—in order to recognise its fitness to protect an organ of such delicate structure and important function as the brain.

[1] Hinton. "On Physical Morphology." *Brit. and For. Med. Chirurg. Rev.* Oct., 1858.

[2] Hinton. *Op. cit.*

But it has another and at least equally important office. It is able to place severe restraint on the forces battling within its cavity, and the thesis I wish now to submit and support in the present paper is that such restraint is necessary to enable the brain to accumulate or concentrate its specific form of energy, and to permit the latter to be liberated with economy and precision.

Assuming in the meantime that an expanding force exists, and that in certain circumstances the brain would become more bulky if the restraint of the cranial wall were withdrawn, it is at once obvious that the greater the expansive force, the greater too must be the reaction on the brain itself. That is to say, *stress*—the tension of combined action and reaction—must be increased. This stress will be equalised through the whole cranial cavity. The brain itself floats on, and is so thoroughly permeated by fluids, that the law of fluid pressure must come into play, and the tension, therefore, will not be greater at one point than at another.

But although stress be equalised, the solid elements of the brain itself may to a limited extent be displaced. They may be so pushed aside by the fluids being augmented or diminished in particular vessels, that from this cause the outcome of the brain's activity may be greatly modified.

Our first step, then, must be to determine the sources of pressure and the factors that may influence its amount and direction.

The main source of intracranial pressure is, of course, the movement of blood in the vessels. The brain is the most vascular of organs, and is fed by four arteries of considerable size. These anastomose freely at the inner base of the skull, and form a circle from which a supply of blood can be readily directed to any part of the brain where for the moment there is a demand for it.

We do not require here to trace in detail the distribution of the various arteries. Suffice it to say they all lose themselves in the *pia mater* in a remarkably fine network of vessels. When they penetrate the brain they are too minute to be traced further with the scalpel. Practically, therefore, the arterial circulation of the whole brain mass is entirely capillary.

Through vessels also of capillary minuteness the venous blood

is returned to the veins of the *pia mater*. Having reached this membrane they coalesce, and becoming gradually larger, they cross the surface of the convolutions and empty themselves into the "sinuses" of the *dura mater*. These are channels tunnelled through the firm inelastic tissue of that membrane, and we may afterwards find a reason for such a termination.

The *pia mater*, then, is quite a unique structure. It is simply a complex web of minute arterial and venous vessels. As seen when the *dura mater* is removed it closely invests the whole brain and lies like a fine pad between opposing convolutions.

An interesting mechanical problem here presents itself. How is it that strangulation does not frequently occur in the circulation of the *pia mater*? On the one hand, we have the brain mass, a large, very vascular body whose circulation we may assume is liable, like that of every other organ, to considerable variations; and in immediate contact, but lying completely external to it, is this membrane with a double plexus of vessels, one set feeding and the other draining the nerve-tissues. Now, if an expansive impulse be given to the brain through the arterial vessels, how is it that the membrane is not so compressed against the *dura mater* as to check its circulation altogether? Such an accident would, of course, be serious. It would involve the immediate collapse of the brain-functions.

By keeping this problem in view we will be led to notice some interesting peculiarities in the intracranial circulation and pressures.

In the first place, the arteries enter the skull in a curious fashion. The internal carotid before and after it has left the temporal bone is curved like the letter *s*, and the vertebrals take also a tortuous course on piercing the *dura mater*. Such an arrangement must lessen any direct impetus given to the brain circulation by the action of the heart.

Then the extent to which the arteries at the base of the brain can be over-filled must be extremely limited. The cranial cavity is not only absolutely full, but as it is flushed with fluids moving, as we shall afterwards find, under considerable stress, it may be said to be tensely filled with incompressible material. It is obvi-

ous, therefore, that not a drop of blood can enter by the arteries unless an exactly equivalent bulk is at the same moment discharged by the veins. It is also evident that if some sudden impetus threatened to distend the brain beyond physiological limits, its mass would at once react by pressure on the larger arteries themselves and check the flow of blood through them by diminishing their calibre.

A third factor is the relation of the blood in the intracranial veins to the pressure of the atmosphere. As this relationship is one of importance it requires to be treated with some detail.

A glance at the solid structure of the adult cranium may convince any one that the weight of the atmosphere cannot bear directly on the contents of its cavity. Numerous foramina exist, but in the clothed skull every one of these is securely plugged. No fissure can be detected by which the air-pressure can possibly insinuate itself.

Through the blood-vessels, however, that enter or make their exit at the base of the skull, an indirect but most important influence can be brought to bear. Throughout the whole vertebrate kingdom, whatever may be the shape of the skull, or however completely the body of an animal may be encased in unyielding structures, there is always in the neck such an amount of soft textures as will allow the atmospheric pressure to bear on the blood-vessels in that region. As pressure on a fluid is communicated in all directions, then through these vessels the atmosphere may be brought to bear on the whole interior of the cranial cavity. It will be directed therefore, not on the external surface of the vessels, as in most other parts of the body, but on their *internal* surface.

Such a relationship ensures constant fulness of the cranial cavity. Moreover, a little consideration may show that within the latter the mass of blood must be remarkably uniform. The principal contents of the cavity are the brain-substance, the blood, and the cerebro-spinal fluid. No one of these constituents can be altered in bulk unless one or both of the others be altered inversely. So long, therefore, as the brain-substance and the extravascular fluid remain unchanged, the absolute quantity of blood within the intra-

cranial vessels must also remain unchanged, although in its mode of distribution it may be liable to endless variations. Some physiologists suppose that the cerebro-spinal fluid can readily flow to and from the spinal canal and thus affect the mass of blood within the cavity, but we will afterwards find reasons to question the correctness of that opinion.

An obviously important purpose is gained by this relation to the atmospheric pressure. The untoward effect of gravitation on the circulation within the head is completely counteracted. Were the cranial wall as pliable as that of the abdomen, the brain would be liable to endless changes in its amount. Indeed, it would be simply impossible to maintain the erect posture on account of the draining that would immediately take place from the vessels.

Again, in its immediate action on the intracranial circulation, the tendency of the atmospheric pressure will be to favor the movement onwards in the arterial vessels, and to oppose that in the veins. It is to the latter circumstance we have especially to attend at present. The moving blood in the veins must at every moment be subjected to a *backward pressure*, the tendency of which must be to retain the blood within the cavity. It will be communicated through the sinuses of the *dura mater* onward to the smallest veins in the *pia mater*, and from the tension so produced it will prove an important means of preventing the circulation in the membrane from becoming strangulated.

How, then, it may be asked, how can the blood escape from the intracranial sinuses? It can only do so by an equilibrium of pressure being maintained between the surface of the body and the cranial cavity. If the pressure within the latter balances that on the surface the flow of blood will not be interrupted; if it be to the least extent lower, the blood will refuse to circulate. Its exit would be effectually blocked by the atmospheric pressure.

As the moving blood is the agent which directly produces the internal pressure, it becomes important to determine the factors that condition its volume and velocity in the intracranial vessels. Is the action of the heart on the general circulation sufficient to keep up the required pressure, or must some further special assist-

ance be afforded to the capillary circulation? These questions will lead us to discuss the most important of all the problems in intracranial physics.

That the amount of blood determined to individual parts is in proportion to the demand for it is a principle that applies to every tissue and organ in the body. Functional activity increases and rest lessens the demand. In an actively secreting organ, as, for example, the mammary gland, the amount of blood in and transmitted through its vessels in a given time is much greater than when its function is in abeyance.

Considerable difference of opinion exists as to the mechanism by which local distribution is modified. Many eminent physiologists insist that the only source of impulse to the circulation is the action of the heart, and that the vasomotor nerves are to be credited with the power of promoting or limiting local supply. That the action of these nerves may influence the circulation is undoubted, but that they alone are responsible for every local change may be more than questioned. A great deal may be said in favor of the opinion that metabolic activity in the tissue itself has directly to do with local circulation.

In an essay like the present we cannot enlarge on all the side issues that may open up, but as this point is an important one in our discussion I may venture to submit a single "stubborn fact" that bears directly on the question.

Every one who knows anything of anatomy is aware that in the abdomen all the blood returned from the stomach, intestines, etc., has to pass through the liver before it can reach the vena cava, and so be transmitted onwards to the heart. It is first collected into one large vessel—the portal vein. This divides into two branches which enter the liver, one to each lobe. There they subdivide like an artery *until they become minute capillaries;* then gradually uniting and enlarging they form the hepatic vein which empties into the vena cava.

The problem here is: how is this portal circulation kept up? Evidently considerable force must be required to enable such a mass of blood to traverse such an extensive and minute ramifica-

tion of vessels. Then, unless one of the most fundamental principles in physics be suspended, *that force must react as backward pressure on the blood in the mesenteric veins.* But these are weak, thin-walled vessels that are quite unfit to bear any serious strain.

It has been argued that the suction force of the heart, acting as a *vis a fronte*, is sufficient to enable the portal circulation to be carried on. An obvious fallacy may be detected here. If the suction of the right auricle can affect the movement of blood in the mesenteric veins, it must be because the pliable wall of the abdomen can permit the pressure of the atmosphere to bear on these vessels. But the same pressure will also bear on the whole external surface of the liver, and thus that on the veins is completely neutralised, so far as power to influence the portal circulation is concerned.

What, then, are the forces that keep up that circulation? A survey of all the surroundings precludes the notion of any mechanical force urging the blood onwards from behind. We are therefore driven to the conclusion that, however obscure the mode of operation may be, the unceasing commotion of the tissue molecules must have to do with the movement, as must necessarily be the case with that of fluids in the vegetable kingdom. Just as in brisk combustion, the air, in spite of the repelling influence of intense heat, is drawn with some force from one direction and hurried on in another, so in all the textures where metabolism is going on, the physical interchanges between the fluids within and outside the capillary walls, the chemical affinities, the attractions and repulsions, the inconceivably rapid oscillation of the molecules, all go to constitute a force which draws the blood onwards and *actively* transmits it through the capillaries.

Assuming this view of the capillary circulation to be tenable, we shall find not only that its application to the brain is most important, but that within the skull we may also find convincing evidence of its correctness.

In restricting attention to intracranial *physics*, we have to study the brain as we would any instrument whose energy may at one time be potential and at another kinetic. The essential or domi-

nant factors and the influence of surroundings in modifying the activity of these; the conditions that affect the storage and conservation or intensity of energy, and those that stimulate its liberation or determine the direction of its discharge,—such are some of the points that must be settled before the action of the brain as a physiological organ can be understood.

The dominant factor in intracranial physics is undoubtedly the molecular activity of the grey matter of the brain; and concomitant with that is the circulation of healthy blood. Could some subtly penetrating *x*-rays reveal to us the interior of the working brain, we should find ourselves looking into a veritable maelstrom of commotion. The blood rushing and surging in all directions; myriads of fibrous structures quivering intensely, and the molecules of grey matter oscillating with inconceivable rapidity,—all which, in the absence of demonstration, the imagination to the extent of its faculty must *see*.

So intimate is the relation between the molecular activity and the capillary circulation, that these two agencies must be regarded as practically one factor. In every manifestation of the brain's functions they must work in harmony. In the production of heat or light in ordinary combustion, the carbon and oxygen are *one*, and the specific energy of the brain tissue can no more be exercised without free circulation of blood than fuel can burn without air. The molecular commotion powerfully attracts the blood; the latter conditions the activity of the brain cells and determines the amount and direction of pressure.

If, then, we can specify with a moderate amount of precision some of the conditions that control or modify the movement of the circulating fluid, we may to that extent be able to explain—not the translation of molecular into psychical energy, but—various aspects of cerebral activity, just as the engineer knows how the heat of his furnace may be modified by regulating the supply of air to the fuel.

Taking, then, the brain in full swing of activity,—responding to present, or reviving and weaving into endless combinations former impressions,—charged with an energy which, when liberated, is correlated to the subtlest psychical activity,—the blood will at

the same moment flush the capillaries with an actively distending pressure, the brain mass will be at its fullest bulk, and its discharging energy at the strongest. But if energy, potentially strong, be diffused, power is lost. Some physical restraint is essential in order to control the direction of motion and to condition the amount of force. Under repression energy accumulates; it becomes more intense, more concentrated if directed into some special channel; more ready to cause explosion if an easy pathway is not opened. In the brain, therefore, outward pressure is speedily met by counter-pressure, partly passive in the unyielding cranial wall, partly active in the energetic movement of fluids on its external surface.

We thus become impressed by the circumstance that the functions of the brain must be exercised under considerable stress. Individual forces seem to be acting in direct antagonism to one another. Currents of fluids are rushing with great velocity and pressing in opposite directions. Then remembering that all this takes place in a space whose capacity is rigidly fixed, we find there must be great tension within the whole cranial cavity.

In physics we have endless illustrations of the behavior of energy under stress. It strives to reveal itself, and all nature gives evidence of its success. The super-heated steam, surging in vain against the walls of the boiler, spends its force on the piston and puts powerful levers in motion. The illustration which perhaps affords the best analogy to the conditions of nervous energy is the storage and discharge of electricity in the accumulator. The molecular structure of certain substances with suitable surroundings can be so charged with that form of energy, that notwithstanding violent commotion in the material particles, it can be confined like water in a cistern and may thence be tapped with marvellous precision.

One of the immediate physical results of uniform tension through the cranial cavity will be that a tendency to vibration will be favored. The brain-substance itself is pulpy, and no more able to vibrate than a bit of soft clay, but under the tension of energetic molecular motion and active capillary circulation the whole contents of the cavity will be subjected to the laws of fluid pressure,

and a thrill at one point may make its influence felt through the whole space. The brain may thus be likened to a musical instrument with its chords all taut and ready to respond with a clear tone to the slightest sympathetic touch.

As is well known, Dr. Hartley traced all the functions of the brain, whether receptive or responsive, to vibrations. The speculations of that author have been considered obsolete and are now seldom referred to, but, although his physiology is vitiated by the circumstance that he places the whole energising power in the "white medullary substance," and that he does not enter into the physical conditions of vibrations, some of his "observations" may still be worth recalling.

"External objects impressed upon the senses occasion, first, in the nerves on which they are impressed, and then in the brain, vibrations of the small, and, as one may say, infinitesimal medullary particles.

"These vibrations are movements backwards and forwards of the small particles; of the same kind with the oscillations of pendulums, and the tremblings of the particles of sounding bodies. They must be conceived to be exceedingly short and small, so as not to have the least efficacy to disturb or move the whole bodies of the nerves or brain. . . .

"The vibrations are excited, propagated, and kept up partly in the ether, i. e., in a very subtle and elastic fluid, and partly by the uniformity, continuity, softness, and active powers of the medullary substance of the brain, spinal marrow, and nerves. . . .

"One may conjecture, indeed, that the rays of light excite vibrations in the small particles of the optic nerve by a direct and immediate action, for it seems probable from the alternate fits of easy transmission and reflexion, that the rays of light are themselves agitated by very subtle vibrations, and consequently that they must communicate these directly and immediately to the particles of the optic nerves. . . .

"As soon as the vibrations enter the brain they begin to be propagated freely every way over the whole medullary substance; being diminished in strength in proportion to the quantity of matter agitated."[1]

Hartley's conjectures as to the transmission of impressions are probably quite correct, and the intracranial tension will help to sustain the vibrations through the brain-substance. Having traced

[1] *Observations on Man; His Frame, His Duty, and His Expectations.* By David Hartley, M. D. (1749.)

these to the sensory centre, and found the molecular energies of the latter in such play as to impress the consciousness, the physicist stops. Unlike Hartley, he does not venture to affirm that sensations *are* vibrations.

Turning to the motor centres and still restricting attention mainly to physical conditions, we shall find that something more than molecular and capillary activity is required for the successful discharge of their energy. If the principle that action and reaction are equal and contrary is of universal application, it must apply not only to the brain as a whole, but also to every energising centre, whether it subserves sensory, motor, or higher functions. In discharging its energy each motor centre has, of course, it own molecular activity greatly raised. This involves more excited circulation and consequently greater outward pressure. Now, if this is not met by a sufficiently stable reaction-pressure, the result will be failure of function. If the surrounding structures, instead of resisting, yield by allowing themselves to be pushed aside, tension in the centre will be lessened, energy will be diffused, and the resulting force will bear with less effect.

A one-pound weight can be lifted with ease; in lifting fifty-six pounds considerable effort is required. The arm muscles involved are in each case the same; the physical action of the brain must be very materially modified.

The nerve-centres in the brain for the muscles of the arm are very limited in extent, and are formed of material that, if exposed, might be bruised to pulp by the pressure of a finger. How is it that their energy can be so concentrated that powerful effects can be produced?

In lifting a heavy weight with the hand, provision must be made for preserving the equilibrium of the body itself, and the means required for this purpose also serve for giving the necessary support to the energising centre. The assistance of a large number of other muscles is required, and as one after another is called into play, tension in a series of corresponding centres is also increased. The stress so occasioned being equalised through the whole cranial cavity, the means of concentrating energy in a limited area are af-

forded. A fulcrum is found for the moving power. Thus the energetic use of a very few muscles may involve the active co-operation of the whole cerebral apparatus. Straining tension on the one hand and steady support on the other are essential. However strenuously the Will may attempt to operate, it will fail in the presence of a flaccid brain. We may as well expect the piston of an engine to be efficiently raised when there is a rent in the boiler, or look for a brilliant stream of electric light by simply rubbing a bit of amber.[1]

If our arguments as to the existence and degree of intracranial tension be tenable,—if pressures occur simultaneously from various directions, and if the stress so occasioned is necessary for efficient discharge of function,—two corollaries may be drawn. In the first place, something more than the *vis a tergo* from the action of the heart will be required to maintain the cerebral circulation. The influence of vasomotor nerves here is *nil*. The most careful research has failed to discover their presence, and yet changes in local distribution through the brain must be of constant occurrence. The blood will move through the vessels, not passively, but with an actively distending force resulting from the direct influence of molecular changes. These powerfully *attract* the blood and urge it onwards through the vessels.

In the second place, the opinion of physiologists as to the behavior of the cerebro-spinal fluid must be modified. There can be no question as to the immense importance of this fluid. Wherever one part of the brain so overlaps another that the surfaces are not

[1] An interesting illustration from pathology may be given to show how an important influence, purely physical in its nature, may be exerted by one centre on another. In the disease called "locomotor ataxy" the power of so co-ordinating the muscles as to control the *direction* of movement is greatly impaired. There is no paralysis, but the muscles fail to work in harmony. The spinal cord is considered to be the principal seat of disease, but tone appears to be lowered in all the higher nerve centres. A patient so affected may stand with tolerable steadiness *so long as he keeps his eyes open*. But let him shut his eyes and he not only becomes unsteady, but, if not supported, *he will fall heavily to the ground*. Thus the centre for vision when active—keeping a certain hold on its circulation and therefore on cerebral pressure—affords such favorable mechanical conditions for the play of some motor centres, that if in certain circumstances its influence be withdrawn no effort of the Will can prevent complete collapse.

in perfectly close apposition, there we have it present. Its use is to give such an amount of steady hydrostatic pressure as will maintain an equal strain through the cranial cavity, and thus to prevent jolt or jar to the delicate nerve-structures. But if it can fluctuate between the cranial and spinal cavities with the ease many writers assert, it would become a source of positive danger instead of being an important agent in conserving the brain's energy. If any sudden or strong strain be required, it would be apt to move away when its passive but steady support may be most essential, and the conditions of successful discharge of energy would be therefore weakened. Of course, if a strain be kept up for a length of time, the fluid may be absorbed or it may be increased according as the pressure is from the brain itself or is within the veins, but as between the cranial and spinal cavities it must in ordinary circumstances be practically a stable quantity.

It would lead us far beyond the limits of a paper like the present to discuss fully the various modes in which by their mutual reactions on one another the active brain and its correlated circulation may throw light on psychical operations. I shall simply touch on a single point where the physical element is still an important factor.

The mass of blood in the intracranial vessels being practically a fixed quantity, no alteration can occur in one set of vessels or in one region of the brain without an inverse change taking place in some other quarter.

If we take the brain at any moment when its functions are quiescent but not suspended, a certain equilibrium in its circulation must be present. This equilibrium will be disturbed at once if a stimulus—sensory, volitional, or ideational—call any special centre into brisk activity. The blood will be determined toward that point in fuller volume. This focussing of the circulation will react on the centre itself and condition or increase its energising powers. Its function will be exercised with greater efficiency. But as the absolute mass of blood that can be drawn on is limited, less of that fluid can at the same moment be allowed to other parts, and therefore the functional capacity of the latter must be lowered.

For example, if the centre for vision be impressed by an extensive landscape, and the consciousness is engrossed in discriminating its varied features in detail,—hill and valley, forest and meadow, river and lake,—the centres for ideation must be deprived of such share in the circulation as is required for successful energising, and the reasoning faculty will be therefore in comparative abeyance. On the other hand, if the solution of some problem requiring close consecutive thinking is being successfully carried out, the balance will be away from the sensory centres and impressions on these will be blunted. The features of the landscape now become blurred or they are not at all noticed.

The existence of some such principle—the possibility of an infinitesimally graduated equilibrium in the circulation occurring in response to local molecular requirements—must underlie and condition the various phases of attention; and if of attention, then of volition and all the other mental activities. But we cannot further enlarge on this aspect of our subject. Enough has been said to show that it is greatly owing to the fact that the brain is "cribbed, cabined, confined" within a rigidly limited space that its functions can be exercised with smoothness and efficiency. We may now inquire, shortly, whether the elementary physical principles we have been making use of may not also be of service in discussing the conditions that are required to ensure rest to the fatigued brain.

In trying to frame a theory as to the causation of sleep, what should we look for?

In the first place, some mechanism must be discovered which, if put in action, can enforce physiological rest to the brain. The mechanism must be gradual in its operation, but ultimately so effective that that organ will for the time be unable to respond to ordinary impressions, or to afford the conditions of coherent thought. In the second place, it must be powerful enough to keep the brain's functions in abeyance sufficiently long to allow such repair or readjustment of the molecular structures to take place that a reserve of nerve energy may be stored up. Lastly, it must be such that if a stronger stimulus—sensory, emotional, or rational—shall require

it, the period of sleep may be postponed, or the soundest sleep may be broken, and a state of alert wakefulness at once restored.

A moment's consideration may convince one that metabolic change alone, or that along with simply diminished circulation, will not fulfil these indications. We can understand, indeed, that the molecular energy of the brain may be so exhausted that functional capacity for the time being will be lost; or we can suppose the circulation to be so far reduced that the brain may be unfit to subserve any mental function. But if either or both these conditions contributed all that would be necessary to induce sleep, serious drawbacks would be associated with their working. The period when sleep would supervene would not depend on the convenience of the individual, but would occur whenever a certain amount of katabolic change had been brought about. Moreover, some local centre or centres becoming exhausted before others, co-ordination among them would be lost. A state of dreaming—of incoherent thought and diminished voluntary control—would be constantly occurring. In short, mental unity would be destroyed.

An additional factor, then, is still lacking, but before referring to it, an important fact in connexion with the exercise of brain functions requires to be noticed.

If the brain be exposed by injury of the skull, consciousness can be at once suspended by a certain amount of pressure being applied to its surface. This fact has long been known. In some cases alternations of waking and sleep could be brought about at the will of the operator. The reason may possibly be analogous to the effect produced by a rude touch on a vibrating bell or wire,—vibration is checked and the tone vanishes. Also, some change in the capillary circulation is likely to have to do with it. The question, then, comes to be: have we any means—physiological in origin but mechanical in operation—available for the purpose of producing compression of the brain? If so, we may find a clue to the conditions that are effective in sleep.

Now, in the venous circulation of the *pia mater* we have such a means, and its mode of operation may be traced with tolerable precision.

We have already seen that these vessels are being constantly acted on by two opposing forces. There is, in the first place, the pressure of the brain mass on their *external* surface tending to obliterate them; and, secondly, there is the backward pressure occasioned by the weight of the atmosphere bearing on their *internal* surface, and tending to dilate them. Here then we have an interesting but simple problem in the composition of forces. Is a constant equilibrium preserved between them, or is there an ebb and flow in one or in both?

The pressure of the atmosphere may be regarded as practically a constant quantity. It of course varies, but any change will affect arterial and venous vessels alike. In ordinary circumstances, therefore, its variations cannot appreciably influence the intracranial circulation.[1]

The expansive pressure of the brain, however, varies considerably. After a certain amount of functional activity the molecular commotion naturally tends to become languid, and, as the direct result of this, the capillary circulation is less energetic. The blood pressure within the vessels must now bear outwards with less force, and the expansive tendency of the brain as a whole will therefore be weakened.

When this condition has been induced, and if the terms of the problem have been correctly stated,—if no essential factor has been overlooked,—it becomes very evident what will happen. The atmospheric pressure will now bear with greater effect within the venous vessels. It has not become stronger, but the opposing force is weaker. The vessels will become distended by the movement of blood being retarded. Until a stable equilibrium has been again reached, *more blood will enter the veins than is being expelled from the skull.*

This conclusion may be argued in another way. It is the united

[1] One reason why, in addition to the less stimulating effect of the oxygen of the air, the power of exertion is so crippled in high altitudes, may be that the greatly diminished pressure on the venous system of vessels within the skull allows the blood to escape too readily from the cavity. There is not sufficient backward pressure to serve as a fulcrum against the energising, and therefore outwardly distending, brain mass.

testimony of all those who have investigated the subject experimentally, that during sleep the brain mass *contracts*. The following is Dr. Hammond's statement as to what he noticed while observing the brain of a dog through an opening in the skull. "While this "state (of sleep) was coming on I watched the brain very atten- "tively. Its volume slowly decreased; many of its small blood- "vessels became invisible, and finally it was so contracted that its "surface, pale and apparently deprived of blood, *was far below the "level of the cranial wall.*"[1]

But if the brain tends to contract it must give rise to a *suction* effort. Is there any structure or fluid on which this can be exerted with success? It is simply impossible that a vacuum can be left. The absolute fulness of the cranial cavity must still be maintained. Evidently, the cranial wall cannot respond; it is too rigid. Nor can the fluid in the spinal canal respond, it is completely removed from the direct influence of the atmospheric pressure. The only structure that can respond is the moving blood in the veins of the *pia mater*, and it can only do so by its flow being retarded, and of course, by the vessels becoming distended.

This altered balance in the circulation does not affect the absolute mass of blood within the skull; it only affects its mode of distribution. It will still happen that for every drop that enters the cavity, an equal quantity must at the same moment be dislodged into the jugular veins.

At this stage, then, we find the following physical conditions: first, the capillary circulation of the brain diminished; second, the veins of the *pia mater* distended; and third, the mass of brain substance contracted or compressed; can we assign to these conditions any physiological significance?

Unless some serious fallacy in our argument has been fallen into, it may with confidence be submitted that in the sequence and combination of these conditions, we have sufficient material to enable us to frame a theory as to the induction and continuance of sleep. No one of them by itself can be called the *cause* of sleep.

[1] *On Wakefulness.* By William A. Hammond, M. D.

Compression of the brain is only the last stage of a sequence, and it may be considered permissive as much as enforced. The molecular commotions are still at every step and stage the dominant factor. A slight increase of stimulus may undo the whole inhibitory process, and with molecular activity restored we have wakefulness and intelligence. The compression, however, is required in ordinary circumstances to secure a sufficiently long rest. A certain amount of vibratory energy is still maintained. Those forms of metabolic activity which are purely nutritive and reparative must be kept up. These lead to recuperation—to improved adjustment —to storage of energy—to restored function.

We can now appreciate the reason why the venous blood from the *pia mater* is emptied into channels with firm inelastic walls, instead of being carried on to an outlet in the skull in vessels of the ordinary kind. The pressure from the veins is not of a passive nature. It is derived from the *moving* fluid within them and is therefore active. The volume of their contained blood will determine the amount of pressure they exert. Then the numerous contributories to one vein would soon so increase its bulk that the pressure from it would be simply paralysing in its effect. The brain structures would fail to react sufficiently against it. The venous sinus is therefore so constructed that its capacity is scarcely, if at all, affected by pressure either from within or from without its walls.

I do not pretend to have exhausted all the modes in which the bearing of elementary physical principles on intracranial activities may be considered. I hope I have said enough, however, to show that their study deserves more attention than is usually given. In coming to close quarters with the problems of psychology more progress is likely to be made by taking a comprehensive survey of general relationships and mechanical adjustments than from exhaustive microscopic and chemical research. However interesting the facts may be in themselves, it cannot be said that much light has been thrown on the brain's mode of energising by having ascertained the size and shape and disposition of its cells and fibres. A knowledge of the molecular structure of a lever may enable one to judge of its fitness for a particular purpose, but it does not reveal

to us the laws of leverage. The relations of the moving power to the resistance to be overcome and to the point of resistance that must be stable are to be learned in other ways. So with the brain, the wider the survey we can take of the physical conditions and relations that affect its working, the more impressed will we be with the number whose influence must be focussed in every act of successful cerebration, and therefore in every manifestation of correlated mental activity. However subtle the latter may be,—however independent of all physical trammels the meditating, reasoning-comprehending soul may seem to itself to be,—the brain is still the indispensable energising agent, and as such it cannot escape the tyranny of mechanical limitations and adjustments, nor of the laws to which all motions are subservient.

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THE CONFLICT OF RACES, CLASSES, AND SOCIETIES.[1]

"WITHIN FIFTY YEARS," said Napoleon at the time of his greatest glory, and therefore when his words were accepted as an oracle, "Europe will be Republican or Cossack." Fifty years have passed and many more, and still there is not the slightest indication of its becoming the one or the other. Events must have followed the counsel of Marquis Colombe: "Between *yes* and *no*, be of the contrary opinion." For instance, we have had a Franco-Russian alliance, which, in spite of the cause which Levasseur wished to find for it in German politics,[2] was none the less a fact. And yet, Europe is not Cossack, and does not seem in the way of becoming so. France indeed is Republican, but an enthusiastic French Republican, Frederic Passy, recently acknowledged: "I do not believe it possible to hold Europe for Republicanism, much less to say that it will become so and when."[3] So the conflict between French society and the Cossack race, predicted by Napoleon, and which was to decide the destiny of Europe has not taken place. Instead there has been a Franco-Russian alliance for combating another alliance between Germany, Italy, and Austro-Hungary. These three nations, or at least the first two, as commonly considered, do not form a society, much less a race. Then what has become of the famous theory of the *Rassenkampf*? The Roumanians, the Servians, and the Slavs certainly do not form a race, and yet they

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[1] Translated from Professor Fiamingo's Manuscript by I. W. Howerth, University of Chicago.

[2] Levasseur, *La population française*, Paris, 1892, Vol. III.

[3] F. Passy, *L'avenir de l'Europe*, Paris, 1895, Vol. I.

are united in a struggle against the Magyars. The Poles in Prussia and the Danes of Schleswig, however Teutonic the latter may be by race, are engaged in a struggle against the Germans. The principle of nationality urges them on, and this principle has little to do with race.

The migrations of peoples in Europe in the Middle Ages show us tribes bound together for war-like undertakings, as for instance the Cimbrians, the Teutons, the Scythians, etc., etc. But, in a new environment these tribes were assimilated by the rest of the population. The invading race did not absorb the other, but a natural environment united both into one uniform group in accordance with the conditions of the environment.

I.

It was principally under the influence of Hegelianism that the theory of races was elaborated in Germany. In France this theory found its principal defender in Ernest Renan. In 1840 and especially in 1848 the theory became dominant, not only because German politics put it at its service, but also and chiefly because it accorded with the national and patriotic spirit that stirred the nations, and with that tendency toward unity which characterised all the peoples of Europe. "It is necessary," they said, "that the State be national, that the nation be one, and that it comprehend all individuals speaking the national language and belonging to the same race. Further, it was important that this national State reduce the heterogeneous elements, that is to say, the foreign."[1] When this theory had served its purpose and had almost completely disappeared from the political field, it still remained in the scientific field. Even to-day, with a considerable number of authors, the social element of the highest importance is that of race. Thus, for example, Morselli writes: "Even in the matter of suicides we find that the zone of frequency corresponds to countries inhabited by peoples differing in religion, culture, and in political constitution,

[1] Cf. de Gobineau, *L'indgalité des races*, Paris, 1894; L. Gumplowicz, *Der Rassenkampf*, Gratz, 1883; Lasare, *L'antisemitisme*, Paris, 1895.

but kindred by race."[1] And Sergi declares that, "If we seek an explanation of the origin of civilisation, and of the dominant Aryan "people, along the Mediterranean as well as in central Europe, we "shall find up to a few years ago, in the minds of all archæologists, linguists, and anthropologists the conviction that Asia was "the unquestioned cradle of the one and the other. The centre "of dispersion of peoples and of civilisation, at least so far as the "primitive ideas of biblical origin are concerned, has been removed "from Mesopotamia to Hindoo Koosh, and Europe becomes an "Asiatic colony into which civilisation has been brought along "with its people."[2]

According to this view civilisation originated in Asia, the cradle of languages and of the Aryan people, the centre of dispersion of the European population. The European people in various groups and in successive times left the common Asiatic centre and established themselves in Europe in their various settlements, carrying with them a common patrimony of languages and civil and religious institutions. There were at first distinct groups, as for instance the Italo-Greeks, the Celts, the Letto-Slavs, the Germans, all of which had formerly belonged to the Indo-Iranian people—the Asiatic group. The Aryans are supposed to have invaded Europe from the east and the west, from the north and the south.

Thus even from the first civilisation was supposed to be due to the superiority of a single race. This race, according to the view here outlined, was the Germanic, and civilisation, including the Greek and Roman, to say nothing of the other successive civilisations, was due to Germanic invasions. Huxley declares that even in historic times the area occupied by the fair races with elongated skulls and speaking the Aryan language, was at least for a time continuous from the northern sea coast to central Asia.

It is a fact, however, that the Germanic type is not encountered in any of these regions except in a very limited number. The chief

[1] E. Morselli, *Il suicidio*, Milano, 1879, p. 158.

[2] G. Sergi, *Origine e diffusione della stirpe della Mediterranea*, Roma, 1895, p. 3; Isaac Taylor, *Origin of the Aryans*, French translation, Paris, 1895.

characteristics of the Germanic type have always been recognised as fair complexion, tall stature, blue eyes, and elongated skulls. The purest example of this type is found in southern Scandinavia. Now the contents of numerous graves in Scandinavia show that, so far as archæology has investigated the so-called neolithic age, the great majority of inhabitants had the same structure, and the same cranial peculiarities as at present. Near the graves of men of this tall race, fair and with long skulls, are found men with wide skulls, that is, with skulls of a greater width, often much greater, sometimes four-fifths of the length. This fact was indeed recognised by Professor Huxley, who, as we have just seen, was deluded by the mirage of the Indo-Germanic theory. He writes that in whatever direction we traverse the interior of continental Europe now occupied by a fair race with elongated skulls, let it be through the Southwest, southern France, across the provinces of Belgium into eastern France, in Switzerland, in southern Germany, in Tyrol, or to the northeast into Poland and Russia, or north into Finland and Lapland, wide skulls appear frequently among the elongated. We find among persons who typically have wide skulls, as for instance the Swedes and the Germans, those with elongated skulls. As a general rule in France, in Belgium, in Switzerland, and in southern Germany the increase in the number of wide skulls is accompanied by the appearance of an always increasing proportion of men of dark complexion and low stature. Even in central France and from that point toward the east among the Cévennes and the Alps of Dauphiné, of Savoy and of Tremont, to the western plains of northern Italy, the tall, fair race, with elongated skulls practically disappears and is replaced by a dark race with wide skulls.[1] But this mixed type, which Huxley recognises among people which more particularly inhabit the so-called basin of the Mediterranean, must also be recognised among the Germans. Several years ago a German writer, Dr. Welcher, more impartial than some of his kinsmen have shown themselves in this question, wrote: "The modern Germans are in part brachycephalic, in part artocephalic, never

[1] *Nineteenth Century*, 1890.

dolichocephalic"; and he continues: "If the primitive Germanic people were dolichocephalic, it must be said that an insignificant number of modern Germans of Germanic stock are found to-day in Germany."[1] As to color, in all the German empire, according to the statistics of Virchow, the fair are on the average 31.8 per cent., the dark 14.05 per cent., while the mixed type reaches 54.15 per cent. In northern Germany itself the number of persons with dark complexions varies from 12.1 per cent. to 6.9 per cent. A really genuine fair race, then, does not exist. If the primitive Aryans were all fair, as the advocates of the Germanic theory maintain, it must be recognised that instead of having imposed their civilisation on all Europe, they have been the conquered race. Pösche, one of the most rabid advocates of the Germanic theory, writes: "The ancient, fair, Indo-Germanic people attacked the Finns, overcame them, and carried away tens of thousands of them as prisoners, reduced them to slavery, and little by little incorporated them."[2] So, according to Pösche, Penka, Huxley, and others, the fair, purely Germanic race, came into Greece and Italy, conquered the primitive dark races and gave to them the Aryan language and civilisation. Thus Huxley writes: "The ancient Thracians were proverbially a people with blue eyes and fair hair. Fair people were common among the ancient Greeks, who were a people with elongated skulls."[3] On the other hand, Sergi has shown very clearly that "in Homer no divinity is fair in the ethnographic signification of the term. Only Achilles and Rhadamanthus can be considered fair."[4] If civilisation was truly born with a fair race, why did it not develop in Germany? This question, obvious as it is, does not seem to have presented itself to the mind of the Indo-Germanic theorists. And yet Taylor[5] considers this as one of the principal reasons which may be advanced against the pretended Asiatic origin of the Ary-

[1] See besides the volume of Sergi already cited, Welcher, *Ueber Wachsthum und Bau des menschlichen Schädels*, Leipzig, 1862, p. 65; Moschen, "I caratteri fisici e le origini dei trentini" in the *Archivio per L'Antropologia*, Florence, 1892.

[2] Th. Pösche, *Die Arier*, Jena, 1878; L. Penka, *Die Herkunft der Arier*, Vienna, 1886.

[3] Huxley, *op. cit.* [4] G. Sergi, *op. cit.* [5] I. Taylor, *op. cit.*

ans. He says that if the Aryans originated in Asia, how comes it that they developed their civilisation in Europe? This question was also proposed earlier by Latham.

Since the evidences of a fair race diminish from north to south, it seems that to develop the various civilisations it must have made a leap, not only into the valley of the Euphrates and the Tigris, and into the valley of the Nile, but also into Greece and Rome. Now, no legend of any of these peoples attributes the rise of civilisation to a northern divinity. Only one legend of this kind, so far as the writer knows, exists. That was found among the people of Chili at the time of its discovery. But unfortunately for the defenders of the Indo-Germanic theory, this legend does not serve in any way to substantiate that theory. Schopenhauer said: "Scratch a German, and you discover a metaphysician," but so far as this theory is concerned, it is not even necessary to scratch it. Its true nature is visible on the surface. It is pure theory unsupported by facts.

II.

Race is the name of a subdivision of one of those groups of living beings which, in the technical language of Zoölogy and Botany, is called a species, and the term denotes the possession of characteristics distinct from those of other members of the species, which have a strong tendency to manifest themselves in the progeny of all the members of the race. These characteristics of race may be physical or intellectual, but in practice the latter, being less susceptible of observation and of definition, can rarely be seized upon and examined. Now, it is a fact that while we frequently speak of race and define what we mean by it, yet in practice it is almost absolutely impossible to make any distinction that will hold. The only element at all reliable which presents itself for anthropological classification is the form of the skull. As to color, it varies widely among the same people. The same may be said of stature. If language is taken as the basis of classification, the results obtained are even less trustworthy.

We continually hear of the Israelitish race. It is spoken of as the most homogeneous of races, and the most refractory. But it is

strongly diverse. Anthropologists are accustomed to divide it into two parts well distinguished—the dolichocephalic and the brachycephalic. To the first type belong the Sephardim Jews, the Spanish and Portuguese Jews, even the larger part of the Jews of Italy and southern France. To the second belong the Askenazim Jews, that is to say, the Polish Russian, and German Jews.[1] In Africa we find agricultural and nomadic Jews allied to the Kabyles and to the Berbers near Setif, from Guelma, and Biskra to the frontiers of Morocco. They travel in caravans to Timbuctoo, and some of their tribes upon the confines of the Sahara are black,[2] as for instance the Daggatomis, as are also the Falachas Jews of Abyssinia.[3] In India white Jews are found in Bombay, and black Jews in Cochin. As to the Jews in China, they are not only allied to the Chinese who surround them, but they have even adopted their customs and the religion of Confucius.[4] It is well known that in Italy they speak Italian, as in France they speak French, and in Germany German. A language is learned and spoken by two peoples which have no other point of contact.

If the cranial form is taken as the basis of classification, the results are no better. Thus Sergi sees in the population along the Mediterranean, a race quite distinct from all others, with cranial features quite unique. But the principal cranial forms along the Mediterranean are at least ten, and besides there is a great number with differences more or less marked. The latter being found less frequently than the former, the famous anthropologist considers them foreign to the race, or the result of crossing. But it is evident that this classification is too generic, not being based upon a single cranial form, and it becomes still more so with this crossing. The fact is there are true and real lines of continuity between one race and another, so that a precise classification is not possible. Even if this anthropological classification were exact, it could not have any sociological importance. For no well-determined causal

[1] C. Lombroso, *L'antisemitismo*, Turin, 1894; Lazare, *op. cit.*,

[2] Mardochée Aby Serour, *Les Daggatomis*, Paris, 1880.

[3] Cf. d'Abbadie, *Nouvelles annales des voyages*, 1845, Vol. III.; Lazare, *op. cit.*

[4] E. Schwartz, *Le peuple de dieu en Chine*, Strasburg, 1880.

relation has yet been shown between the form of the skull and the intellectual development of individuals. Not only this, but of two peoples belonging to the same ethnographic branch one makes enormous progress, while the other remains stationary, as for instance the Chinese and the Japanese. The Japanese ethnographically belong to the same race as the Chinese. They have assimilated, it is true, a few small foreign groups, but these are of too little importance to be regarded as the true cause of the modification of the Japanese character. While we have seen the Chinese struggling bitterly against European civilisation, the Japanese with an enviable eagerness have sought to assimilate as much of it as possible. The English waited two years before accepting the metric system, but the Japanese accepted it as soon as they understood its utility. An enormous waste of time, a true *gaspillage*, was produced by the use of their alphabet. In spite of their intense national spirit, strengthened by recent victories, they have already decided to abandon it for the European. The Germans even yet hold to their caligraphy, and wish to continue it. Only in commerce has it begun to fall into disuse. The Kabyles, in northern Africa, are a people as energetic and industrious as the Tonareg are obstinately nomadic. Nevertheless the Tonareg and the Kabyles belong to the same race, and speak almost the same language.[1]

At the end of the fourteenth century could anybody in the world have predicted the commercial and industrial development which has since taken place in England? At that time it was a people of peasants and of soldiers who had shown their bravery in the Hundred Years' War. Originally the English not only had no inclination toward commerce, but were sluggish and preferred to remain in their villages. Even now they call a voyage, *travel*, and to make a voyage has become *to travel*, in consideration no doubt of the trouble which a voyage gave them, and the effort required to make it.[2]

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[1] N. Schirmer, *Sahara*, Chap. XIV.; G. Brissier, *L'Afrique romaine*, *Ch.* IV.

[2] A. Marshall, *Principles of Economics*, Vol. I., Bk. 1, Chap. 3.; F. S. Nitti, *Il Lavoro*, p. 9.

We may affirm that the intellectual development of an ethnographic race is not only very diverse, but is modified and developed by causes quite foreign to the action of other races. The assumption then, as the anthropologists almost unanimously affirm, that European civilisation has come from one race, is entirely gratuitous. Our historic memory covers so small a space of time that we can obtain from it very small assistance. Even in a period so recent as 1500 years before Christ, northern Eurasia lay in historic darkness, with the exception of a ray of light thrown upon it by Egyptian and Babylonian literature. The many interesting discoveries brought to light by the extended researches of the last ten years into the primitive history of the human race has placed beyond doubt one important fact (a fact for a long time probable on account of other reasons) that the existence of the human race reaches back at least twenty thousand years. Haeckel, a competent authority, although he frequently makes very bold assertions, thinks that the existence of the human race reaches back to more than a hundred thousand years.[1] As it may have been many hundreds of thousands of years, it appears comical that even to-day our calendar places the creation of the world, according to Calvitius at five thousand eight hundred years ago. In any case, man lived as such in Europe during the diluvial epoch along with many great mammals long since extinct—as for instance the diluvial elephant or mammoth (*Elephas primigenius*), the woolly rhinoceros (*Rhinoceros tichorhinus*), the gigantic deer (*Cervus euryceros*), the cave bear (*Ursus spelæus*) the cave hyena (*Hyena spelæa*), the cave tiger (*Felis spelæa*), etc. The results obtained from putting in the light of modern geology and archæology the fossil remains of men of the diluvial age and of contemporaneous animals are of the highest interest.[2] The theory of a centre of diffusion of the human race is not only hypothetical, but unscientific. Yet into this grave contra-

[1] E. Haeckel, *Schöpfungsgeschichte*, Italian translation, ed. 1892, Ch. 20.

[2] Cf. C. Lyell, *The Geological Evidences of the Antiquity of Man*, London, 1869; J. Lubbock, *Prehistoric Times*, Italian translation, Turin, 1878; L. Büchner, *Der Mensch und seine Stellung in der Natur*, Leipzig, 1872; P. Topinard, *L'anthropologie*, Paris, 1888.

diction Haeckel himself falls. While he recognises the ancient origin of the human race, he imagines a special country called by the English writer Schrader, Lemuria, which he thinks must have been the centre of the dispersion of the various human races. Lemuria was a continent at the south of Asia, which has long since disappeared.

As gratuitous as the theory just criticised seems to me also that of my illustrious friend, Professor Sergi of the University of Rome. He admits a race and a civilisation in the basin of the Mediterranean, which arose independently of any foreign influence whatever, eastern or northern. He distinguishes in this locality four principal and complex branches—the Iberians, Ligurians, Pelasgians, and Libyans. The centre of dispersion of this race he thinks was central Africa. While he declares that the cranial form has not varied from its original form, he does not tell us why in the same place four branches of a single race have originated, and not one only. He admits that the clear brown of the Egyptians was always such, and not a bleaching of the dark brown of the Africans. But whence comes the much clearer skin of the Mediterranean peoples? The Pelasgians, for example, might have been an anterior mixed population like the occidental Gauls and the Britons before the Teutonic invasion.

Professor Otto Helm in the accurate researches which he has carried on for more than twelve years, has collected from eastern Prussia many objects made of bronze and other alloys of copper and belonging to a very ancient prehistoric epoch. Chemical analysis shows that these objects contain 3.87 per cent. of antimony, but the bronzes of Hungary are the only ones in which this metal is found in that proportion. Then with Helm we must conclude that the prehistoric bronzes of eastern Prussia are of Hungarian origin. On the other hand, in Hungary many objects made of yellow amber have been found. These must necessarily have been imported from the Baltic. These facts, with other numerous evidences, lead us to the conclusion that relations must have existed even from the most ancient times between the inhabitants of the shores of the Black Sea, the Adriatic Sea, and the Baltic. These relations were en-

couraged by the presence of the Vistula, but who is able to say with scientific seriousness that the people of these three regions were one, and that they went into foreign countries to exchange those objects which we now find scattered.

The same observation may be made in regard to the distribution of skulls in the different regions. Sergi has found in the skulls of the Museum of Mona the Mediterranean forms and the forms of Egypt and Ethiopia, and writes: "I saw again the beautiful pentagonal forms, the elliptical and the ovoidal forms with those characters peculiar to the Mediterranean, and I saw the secondary forms which are mingled with the first from the remotest times in the various migrations of peoples, and from this fact I had the conviction, which I here repeat, that the first colonies came from southern Russia to the Mediterranean."[1] Sergi does not consider the opinion of Schrader, who reaches a conclusion directly opposite to his own, to be of any value. Schrader holds that the seat of the primitive Aryan people was European Russia.[2] So the region which according to Sergi is the limit of the diffusion of the Mediterranean race is according to Schrader the beginning of it. We may then conclude that one can never say with certainty whether people with a given cranial form are the invaders or the conquered.[3]

The zoölogic process according to Darwin is imagined as a tree. He shows how the many branches of this tree appear, increase in size, and remain, but his doctrine does not go beyond the roots, nor does it reach above the branches. This is true as it is applied to the human races. Even in pushing our investigations to the remotest prehistoric epochs we find diverse races in contact

[1] Sergi, *op. cit.*, p. 87.

[2] Schrader, *Prehistoric Antiquities of the Aryan Peoples*, translated by Jevons, London, 1870.

[3] Sergi starts out with the following assumption: "Wherever a race-stock is found always predominating, there should be found the hearthstone of civilisation. On the other hand, wherever is found a race-stock with its physical characteristics and its products in the midst of other race-stocks later become predominant, there should be found transformations and super-positions of racestocks and of products." Now, this law cannot be depended upon. Novicow (*Les luttes entre sociétés humaines*, Paris, 1894) finds many facts which contradict it. Some of these I have pointed out in a pamphlet on *La question sicilienne en Italie*, Paris, 1895.

with each other without its being possible to make any precise distinction, and without our being able to attribute civilisation to one race rather than to another. France has had periods of great prosperity, and these have alternated with those of decadence, but Alfred Fouillée[1] has shown that the true historic tradition of this country remained constant even when Gaul became France.

In Europe the Italians occupied a position more elevated than the Spaniards, but this is not the case in Argentina, in spite of the fact that the Italians there number 892,992, while the number of the Spaniards is only 254,527. The Spaniards of Argentina are superior also to the French, who number 145,785; and it is the prior emigration of the Spaniards, a fact entirely fortuitous, that decided the social economic direction of Argentina, in spite of the fact that the French and Italian races are superior to the Spanish.

The civilisations of different peoples are developed almost without any relation to their race. Civilisation passed from the south to the north in Europe without having caused any displacement of races. If one should attribute the fall of the Roman Empire to invasions of a few tens of thousands of savages, one attributes too great an effect to so small a cause. The decay of the Roman Empire began long before the influence of any foreign race was exerted. In the fourteenth century Venice was the greatest commercial city in Europe. Now it has become a port of the fifth rank. The port of Venice is not sufficiently deep for modern ships, and commerce has taken another direction. All this has had little to do with race.

The social phenomenon of civilisation is almost completely independent of the anthropological phenomenon of race. At least up to date no serious relation scientifically tenable has been established between these two phenomena.

III.

It is said by some that the human constitution is less passive and plastic than it used to be (Peschel, Meyer, Hellwald, Waitz).

[1] A. Fouillée, *L'idée moderne du droit*, Paris, p. 76.

Since we are completely ignorant of the original race stock, that assertion is absolutely gratuitous. Others maintain that the tendency to unity is caused by historic and social factors,[1] but we shall soon see that the action of these is opposed to unity.

The actual current which is carrying us towards international unity is not independent of the immense variety of physical environment which is assisting to-day in the formation of new races. In the United States one may observe the process of the modification of the Anglo-Saxon character. Out of the difficulties of colonial life and the struggle with primitive nature a new type has been born, and yet the relations between England and the United States are very close. A large English emigration crosses the Atlantic every year and spreads itself over the Union. If Montesquieu had been questioned in regard to this fact, he would probably have responded with the phrase with which he begins the book which cost him twenty years of thought and elaboration, "Laws in their most extended signification are necessary relations derived from the nature of things. In this sense all beings have their laws."[2] He would make the same reply to those who should ask why Italy and Spain are agricultural while England occupies the first rank in the metal industries. There are natural laws which make the difference between an Englishman and an Italian or a Spaniard. There is in Ausner[3] a table of statistics of criminality by sexes in nineteen of the most important countries of Europe. "Wherever industry and commerce predominate, criminality among women sensibly increases." By heredity this criminality becomes a characteristic of a new race, and so with all other physical and moral characteristics. In this way is formed, to use the expression of M. Le Bon, "an Historic Race."[4]

It is easy to understand that the sociological value of an his-

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[1] N. Colajanni, *Sociologia Criminale*, Vol. II., p. 286. On this subject see my work on *La question sicilienne et Italie*, p. 45 et seq.

[2] Montesquieu, *Esprit des lois*, Ch. 1.

[3] Ausner, *Vergleichende Statistik von Europa*, Berlin, 1865.

[4] G. Le Bon, *Les lois psychologiques de l'évolution des peuples*, Paris, 1894, pp. 45–52.

toric race is entirely different from that of a true ethnographic race in its anthropological signification. This much is clear, the natural conditions of the environment exercise upon individuals more or less influence. Adaptation to environment is one of the principal supports of the Darwinian theory. But this theory does not carry with it the idea that among historic races there has been a conflict.

What are the conditions of the natural environment which develop identical conditions in the individuals which inhabit it? It is absolutely impossible to say in what one natural environment differs from another. The natural environment is constituted by a complexity of circumstances, some apparent, others imperceptible, of which it is impossible to declare what the effects will be.

Ferdinand Gregorovius on the 2nd of October 1870 writes from Karlsruhe of the tremendous impression which Strassburg made upon him. He is carried away by the magnificent view from the top of the Cathedral. "From this point," says he, "one may see that Alsace naturally belongs to Germany, for the Rhine melts away in the distance without making any natural boundary. Along its banks are the Vosges and the Black Forest."[1] Now, this statement of Gregorovius is simply absurd. What is the visible indication of a termination of the natural conditions of Germany and the beginning of the French territory? He does not say, and I could not undertake to do so without making myself appear ridiculous.

The various natural environments form a gradation that never makes a leap nor leaves a hiatus, and it is just so with populations. In Scotland we hear of Highlanders and Lowlanders, that is, inhabitants of the Highlands and inhabitants of the Lowlands, but who will say that they constitute two quite distinct social types? On the contrary, the line of continuity is perfect. As a general principle, therefore, we may affirm that peoples inhabiting contiguous regions and yet presenting quite different ethnographic characteristics are quite rare.

Fouillée is right when he says, "The falsifiers of history, so numerous beyond the Rhine, have represented as a struggle of races

[1] F. Gregorovius, *Diarî Romani*, 1895, p. 454.

the fratricidal war of France and Germany, two countries really alike in ethnic composition."[1]

The same thing has been done with the wars between the French and the Italians. The following table shows the increase of foreigners in France:

Year	Native French	Naturalised	Aliens of all Nationalities Number	Per Cent.
1851	35,388,814	13,525	379,289	1.06
1861	36,864,673	15,259	509,381	1.35
1866	37,415,283	16,286	655,036	1.72
1872	35,346,695	15,303	740,688	2.03
1876	36,069,524	34,510	801,754	2.17
1881	26,327,154	77,046	1,001,090	2.64
1886	36,700,342	103,886	1,126,531	2.97
1891	36,832,470	170,704	1,130,211	2.97

In the last census of the French population, the Italians numbered about three hundred thousand. Now could it be asserted that the violence exercised by the French laborers against the Italian laborers was an illustration of a struggle of races? That would be a false assertion. The French laborer is frequently suspicious of the Italians solely because they are willing to accept a smaller wage and therefore increase competition. Now if we are to take the fact that the laborers of the one race are contented with a lower wage than those of the other as a distinction, I do not know what is meant by race.

A similar phenomenon may be observed among laborers of the same race in the usual sense of the word. In the case of a strike, it does not matter whether it is declared for an increase in salary or to prevent its diminution, whether it is desired to prevent a scaling of wages, or to secure an increase, all the laborers are not likely to be of one opinion. Some will accept lower wages, or do without the increase, being almost indifferent to the result. These laborers may refuse to take part in the strike and may wish to remain at work. Who is not familiar with the tyranny of striking laborers

[1] A. Fouillée, "Le caractère des races humaines et l'avenir de la race blanche" in the *Revue des deux mondes* July, 1895.

against those who are disposed to work? Must we therefore conclude that they belong to a different race?

In the Middle Ages the Israelites clothed themselves in a special color, in general yellow, but the Christians in forcing them to do this never thought of race distinctions. They simply satisfied their religious prejudices. There are many cases of conversions of large numbers of the Israelites. All the Israelites of Braine, of Tartose, and of Clermont were converted about the same time through the efforts of Avitus. Vincenzo Ferrero baptised twenty-five thousand of them at once. After the Council of Toledo, which prohibited mixed marriages, many of the Israelites were converted. With the change of their religion, the persecution of the Christians ceased? Must we then conclude that they changed also their race? How absurd! The entire dress which the Israelites wore in the Middle Ages was due to a spirit of exclusiveness, a spirit of false Chauvinism, which the Christian persecutions gave rise to. These artificial distinctions were used in the absence of any real difference between the races.

Language, like religion, is a distinction of quite secondary ethnological importance. After an individual has remained a long time in a country, he usually learns its language and its customs. And yet the Italian colony in France is made up chiefly of emigrants more or less transient who scarcely ever learn to speak the language of the country they inhabit. But the Italian laborers are contented with very low wages. They, therefore, compete with French laborers and thus tend to lower their wages. But in Austria where there are, according to the last census, about forty-six thousand Italians, almost all laborers,[1] the wages of the Austrian laborer are no higher than those of the Italian, hence between the two there arises no serious competition. There is, however, the same difference of language. In France the union of native laborers against the Italian is not on account of any antagonism of race, but solely an economic phenomenon. The same thing does not happen in Austria because there is no antagonism. In France the Italian language

[1] Cf., *Le monde économique*, July 28, 1895.

has become almost a mark of distinction of the laborers accepting a low wage. "In India," says Ibbetson, "similarity of food is employed as an exterior sign of community of blood."[1] Now, what would be said of an ethnographic classification of Indian races based upon eating? Language is no better, for it is only an external characteristic of no intellectual or physiological importance. If it were taken as the principal distinction of the various races, it would have to be admitted that the people who speak the modern Romance languages are not Latin,—but that would be absurd. Frederick Müller, taking language as the distinguishing feature of human races, is not able in his ethnography to avoid a classification entirely empirical. He forgets that an inferior people may learn a language, and history shows abundant incidents of the transmission of language from one race to another. "There is no proof," says Huxley, "for asserting the incapacity of a race to substitute another language for its own. Physical, moral, and mental peculiarities are transmitted with blood and not with language. In the United States the negroes have spoken English for generations, but nobody would call them English, or expect to find them different physically, mentally, or morally from other negroes."[2]

By the foregoing illustrations we see how various are the distinctions made by different authors between the races: the color of the skin, form of the skull, religion, language, even a cross-section of the hair. If this section is oval in one individual, and in another round, lo! the two individuals belong to two different races.

Now, if the characteristics of race are so uncertain, how can we say that there has been a conflict of races? The expression "conflict of races" implies that all individuals belonging to the same race are united, or at least cohere for reacting against those of another group, that is of another race. Laumonier writes: "Six or seven races have united to form the French nationality, as many

[1] Cf., E. Senart, "Les castes dans l'Inde" in the *Revue des deux mondes*, Sept. 15, 1891.

[2] Cf. on this point the work of Huxley already cited, Taylor (*Origin of the Aryans*, London, 1890), and the *Pall Mall Gazette*, January, 1870.

the German, more yet the Italian."[1] And Novicow says: "There is not a single country in the world which has been peopled by one race autochthonous and pure."[2] Sergi says: "I have found in various parts of Italy skulls so small, although normal in anatomical constitution, that I have called them microcephalous. I found the same in Malaysia, among the Kurgani in Russia, and in ancient cemeteries, and among the skulls along the Mediterranean which are said to be those of the Phœnicians. The types or forms of these craniums are very different from those of the people who form the main race-stock, and frequently present marks of inferiority of structure. Many, even all, that I measured and considered as belonging to the pigmy stock were inferior in cranial capacity to the Negrito or Oriental pigmies. The study of the population of Italy in regard to stature confirms my investigations concerning the existence of a pigmy population, a fact also supported by the small capacity of some skulls. I find that in the male population of twenty years of age there are 1.63 per cent. from 1.25 meters to 1.45 meters, and 14.49 per cent. from 1.25 meters to 1.55 meters. Taking the whole population male and female, estimated at 30,000,000, we have measuring 1.25 meters to 1.45 meters, 978,000 pigmies, male and female; 1.25 meters to 1.55 meters, 4,347,000,—an enormous number out of a population of 30,000,000.[3] Now, it is a fact of great importance that a race which in respect to another is not only physiologically and intellectually inferior, but inferior also in numbers, is able to live and prosper alongside of it. Then what becomes of this theory of the conflict of races? If, after so many centuries, it has not affected the selection of an inferior race, that means that even if races do exist, a conflict of races does not.

[1] Laumonier, *La nationalité française*, Paris, 1889, p. 53.

[2] J. Novicow, *Les luttes entre sociétés humaines*, Paris, 1890, p. 241. "Unity is lacking, races have been divided, scattered, mingled, crossed in various proportions, and in every direction, through many centuries. The principal groups have disappeared, their places have been taken, not by races, but by peoples."—P. Topinard, *op. cit.*

[3] G. Sergi, *op. cit.*, p. 90; "Le varieta humaine" in the *Atte della societa Romana d'Antropologia*, 1893.

IV.

Malon thinks he recognises in a strike one of the gravest manifestations of the conflict of classes. Well, on the 25th of August, the political journals of Paris published the following telegram: "The related industries have united with the striking glass-blowers "of Carmaux. Workmen in the industries related to glass-blowing "have pledged themselves not to resume work until the glass-blowers are taken back. They have thus united themselves into a "single body comprising twelve hundred men. The strike quietly "continues, and will be maintained while the strikers receive assistance. This has been voted by several councils, general and "municipal." On the same day the following telegram was sent from Pisa: "The women weavers of the Nissim factory have struck, "making common cause with a clerk of the establishment. The "clerk was aggrieved on account of the fact that privileges which "he thought due to him were withheld, etc." These two strikes taken at random perfectly illustrate what we wish to show. Notice that at Carmaux the strikers were at first a single class, namely, the glass-blowers. These were joined by the workmen of related industries. At Pisa the strike was begun by a clerk.

It is well known that the land-holders, especially in Germany, are strengthened by the support of the peasants. The land-holders persuade these poor people that a rise in the tariff on foreign cereals brings with it a rise in their wages, and so the proprietors and the peasants unite to obtain privileges in favor of agriculture. These have to struggle with another class, namely the manufacturers, whose interests are frequently opposed to those of the land-holders. But these two classes unite in a conflict with a third class, namely the consumers, who do not wish to be despoiled by any advantage gained by the other two. Thus it may be seen that often the same individual at the same time is engaged in the struggle of two different classes. Indeed the chief characteristic of modern social classes is their unstable composition.

In the Middle Ages classes were firmly established. Individ-

uals practising the same profession formed a well-defined corporation. Each member knew his rights and duties. Not only that, but the transmission of a profession from father to son was made with greater regularity than it is to-day. In addition to the excessive favors accorded to some of these corporations whereby they were able to despoil all below them, they were useful to their members. The market being limited, the need of a regular production was rendered necessary. This in fact was always fixed. Thus the corporation obtained a perfect regularity in economic production, and served a purpose.

On account of a complexity of circumstances which has enormously developed the economic market and economic production, the utility of the classes and corporations of earlier times has disappeared. When in modern times they attempt to reconstitute themselves their true scope is social spoliation. That which individuals acting alone cannot obtain they attempt to secure by united effort and by the force of numbers.

The following may serve as an example. The Midland miners in England some time ago, threatened a great strike. Lord Rosebery intervened, and formed a council presided over by Lord Stand, by which it was sought to bring the miners and the employers into accord. As a result, the minimum of wages was raised thirty per cent. over the wages of 1888. Mr. Emerson Bainbridge, President of the Company at Unstone, who works among others the mines of Drousfield in Yorkshire, had to close up these mines. By the increase of salary which he was obliged to give to his workmen, his profits, already low in the mining industry, were converted into a loss. Mr. Emerson Bainbridge would never have consented freely to an increase in the wages of his workmen because he simply could not do so. He was forced to it by the union of the workmen, with the result that the work itself was stopped. The pretended conflict of classes is then an effort to secure by the brute force of numbers that which single individuals acting freely could not obtain. This, beyond a doubt, is illegal and unjust. If X goes to Y and demands his pocket-book, Y will certainly refuse to give it up. Then X proposes to K, to L, etc., that they unite with him in de-

manding the pocket-book of Y. Y, now being confronted by several persons can no longer refuse as he did before, and consequently surrenders his property. Now the association of X, K, L, etc., to secure the pocket-book of Y, we call an association of robbers. By the brute force of numbers they secure that which individually they could not have obtained. It is just the same in this pretended conflict of classes. A certain number of laborers unite to secure higher wages, which the condition of the market will not allow, and which otherwise acting freely they could not obtain. Sometimes they unite to impede the work of women, even those belonging to the same class, because they are laborers. I have recently seen that in Rome the carpenters, in order to prevent the employment of laborers from a neighboring city who enter into competition with them, have formed an association. Even this has the bare-faced effrontery to call itself a conflict of classes. Conflict of classes is an expression which is meant to signify collective action which tends to repair certain social injustices. It is very clear, however, that under this name attempts are made to commit the gravest social wrongs.

V.

The individual strives to obtain the greatest possible amount of wealth. His welfare depends upon the satisfaction of his needs, which satisfaction is procured by that which generically is called wealth, or goods. Individual actions are exerted to obtain the greatest possible quantity of wealth in order to satisfy the greatest possible number of needs. By the capture of women the family was constituted, first under the polygamic form, then after a slow evolution under the monogamic. The primitive bond of the family, Novicow concludes with Starcke, issues from the right of property.[1] To the same effect Giraud-Teuton writes: "Love between father "and child appears to be a conquest of civilisation, rather than a "permanent phenomenon of the natural history of the human race, "and the sentiment of paternity destined to become so elevated

[1] J. Novicow, *op. cit.*, p. 71; C. N. Starcke, *La famille primitive*, Paris, 1891, p. 271; Westermarck, *Les origines du mariage humaine*, French translation, 1895.

"had an interesting origin. The first relations between father "and son that one remarks among barbarous peoples are those of "master and slave. Their relations are not determined by reciprocal "love, nor by conscious ethnic principles, but only by the move- "ment of selfish interest, and they rest chiefly upon brute force or "physical superiority."[1] Even to-day among the lower classes, is not a male child, on account of his being more profitable as a laborer, preferred to a female? Among the higher classes, a son is eagerly desired on account of the "pride of name." This pride of name as well as the economic materialism of the less prosperous classes which causes them to prefer the male child to the female, are manifestations under different forms of that early egoism which determined the formation of the family.

The social institution of the family, like everything else which continues to exist, is explained by a reason essentially utilitarian.[2] This much is clear: If man had not always been essentially selfish, the human species could not have survived. For man selfishness is a duty arising from the law of individual preservation. Human selfishness looks out for number one, but it has undergone a continuous evolution. From blind selfishness, truly animal, which sees in things only their immediate utility, man has passed to a selfishness more and more refined and clear-sighted, so that immediate utility is frequently sacrificed in favor of a superior deferred utility.

So then if society instead of being useful for the preservation of the individual had been disadvantageous, it would never have existed. Unconsciously the individual has conformed to society in order to satisfy in the best manner his needs.

The idea of Wallace, who supposes that human evolution has followed a mysterious direction exercised by a superior intelligence by means of agencies more subtile than any with which we are acquainted, is perfectly silly.[3] Morselli justly and acutely observes

[1] Giraud-Teuton, *Les origines du mariage et de la famille*, Paris, 1884, p. 432; G. Vadata-Papale, *Inconscio e conscio nel processo evolutivo della vita sociale e del diritto*, Bologna, 1895, p. 48.

[2] See especially Spencer's *Principles of Sociology*.

[3] A. R. Wallace, *Essay on Natural Selection*, London, 1889; *Darwinism*, London, 1889.

that Wallace is a convinced Spiritualist, and that his hypothesis is far removed from the scientific sphere. But this is not the place to discuss it, even if it were thought worthy of examination.[1]

The same may be said of the theory of Hartmann. It is an unscientific hypothesis, an attempt to explain facts not by other facts and laws, but by mysterious, unverifiable and inefficient causes. For what is the use of an unheeding deity to govern the world and human society, if the actions of individuals and their mutual relations to their environment are sufficient to explain everything.[2] Individuals in relation to the environment in which they live, seek to appropriate from it the greatest possible quantity of energy. For this purpose they unite their efforts in various ways and thus determine that enormous complexity of relations which are called social.

Social relations find their basis and their *raison d'être* in the individual, but when individualism is pushed to the extreme of Max Stirner, of Frederic Nietzsche, or R. Schellwein it is unsustainable. "*Ich singe, weil ich ein Sänger bin. Euch aber gebrauche ich daher, weil ich Ohren brauche.—Ich hab' mein Sach' auf Nichts gestellt.*" Or as another writer says: "The ego, the single existing individual man, is the only thing. Outside of myself, there is nothing. The ego, as religion affirms of deity, is inexpressible, and it is perfect since it is at every moment all that it can be. More it cannot be, nor has it need of being. Every other being or thing is my property in so far as I have the power to appropriate it, and in so far as I wish it." Now this is blind individualism.

As a matter of fact, the individual finds it useful to associate his efforts with those of other individuals in order that he may obtain in the labor of production a greater quantity of goods. The comfort of the Parisian as contrasted with the poverty of the Hottentot or the Kaffir is due precisely to a complicated series of associations of effort, and to the division of labor, both of which have been

[1] E. Morselli, *L'antropologia*, Turin, 1889–1895, p. 399.

[2] Cf. A. Fouillée, *La science sociale contemporaine*, Paris, 1880, p. 198; G. Vadata-Papale, *op. cit.*, p. 8.

slowly developing. How many victims are scattered along the highway of social progress! How many times this way has been missed, and how many efforts have been made before finding it! All this labor, inconceivable on account of the number of centuries it has been carried on, has had one single motive in its unwearying and unceasing application—the need of increasing individual welfare. If all this labor had been due to a single individual, or even to a single family-stock which had continued through the centuries, the present result could never have been obtained. Modern civilisation would never have begun.

But people have been in contact with each other from the remotest epochs. In this contact one people has taken from another the useful knowledge which it had discovered, and *vice versa*. By other people there has been a continual storing up of useful knowledge, so that their amount has always been increasing. The civilisation and the welfare of every people is in direct proportion to its quantity of useful knowledge.

Now the civilisation which arose along the Mediterranean was not in fact due to this or to that race. It was a result of natural geographic conditions. Sergi recognises this when he writes, "The Mediterranean was not only a European Sea. The waters of Europe, Asia, and Africa united to form it, and were the channel of communication and of contact between the three continents of the ancient world."[1] "The superiority of the white race," says Sereix, following Quatrefages, "is an arbitrary dogma."[2] If it had not occupied the basin of the Mediterranean and united in itself all the useful knowledge which belonged to the three continents of antiquity, the white race would never have been able to give to the world the cosmopolitan civilisation which it has given. That is, it could not have given that civilisation which has been the mother of all others, even our own. This is aside from the influence which natural conditions have exercised upon the character of individuals.

[1] G. Sergi, *op. cit.*, p. 41.

[2] Rafael Alvarez Sereix, *Fechas prehistoricas y Porvenir de las Razas*, Madrid, 1893. In this book the influence of geographic conditions on the development of civilisation is very well set forth.

Why is the German more of an idealist than the inhabitants of the Mediterranean basin? If we exclude the different influences which the conditions of a natural environment exercised upon the development of the two characters, I do not know where we should go to find any other cause.

Grossi is in accord with Courtenay in writing that the modern character of the South American is a result of the mixture of the European and the Indian character, with a predominance of the apathy of the latter.[1] That is very true, and it is quite natural. Indian apathy can only be explained by climatic conditions. Now can it be admitted that these climatic conditions have exercised no influence upon the immigrants of South America? There are three factors,—the character of the Indians, the superiority of the Europeans, and the climatic conditions favorable to a persistence of the Indian character. The combined result of these factors is a change in character with a predominance of the Indian.

So the climatic and meteorological conditions of the Mediterranean basin developed a character in individuals which moved them to feel a lively need of increasing their own welfare.[2] The explanation of this is to be found in the temperate climate, fertility of the soil, and the abundant production. On leaving this favored locality, the deserts of Libya and Syria are encountered, or other regions considered in ancient times inhospitable, as for instance Scythia and the centre of Europe. Even the Euxine sea-coast was called by the ancient Romans inhospitable with respect to Italy in which the centre of its great civilisation was not the valley of the Po, but the central and southern region. The same was true of Greece. Philosophy and the Arts did not flourish in Macedonia.[3]

The very fact of living in contact with other people develops in individuals the needs which they see others satisfying. Here we

[1] Courtenay de Kalb, "The Social and Political Development of the South American People" in the *Bulletin of the American Geographical Society*, 1894, pp. 1–31; V. Grossi, *Geografia Medica e Coloniæ*, Rome, 1895, p. 35.

[2] To say of a people that it is very religious and speculative, holding obstinately to tradition, is to say that it is singularly insensible to the joys of action and to the solicitations of material progress. Cf., E. Souart, *art. cit.*, p. 359.

[3] Cf., Sergi, *op. cit.*, p. 42.

have a splendid illustration of the law of imitation.[1] We see this action even in our own day. The city develops more needs in the individual than the country. That is easily understood. In the city every individual sees others satisfying a greater or less number of needs which have not yet been felt by him. Sooner or later they begin to develop in himself. Needs first arise in a limited number of individuals, a sort of *élite*, and then according to the law of imitation are propagated.

In the city a very strange phenomenon appears. Among manufacturers a need second to none is that of making a profit upon the products of manufacture, and that this profit be as great as possible. So, in endeavoring to satisfy this need, they invent new articles, perfect those already invented, and thus foster a public need for them. Many articles are made even before the need for them arises. A new need always arises out of the necessity of the individual, and is then propagated in accordance with the law of imitation.

But even the spirit of imitation is not sufficient to produce a need when it conflicts with utility. The present writer, for instance, neither smokes nor drinks wine. Here are two needs very much felt in modern society, which in him are negatived by utility. Doubtless he would smoke if cigarettes did not annoy him, or drink wine if it satisfied a need. In his case the idea of utility is stronger than the spirit of imitation, and there is no fear that the contrary could ever be true.

In general, no one feigns a need who suffers by doing so. True, it sometimes happens on account of strong collective suggestion, but only in pathological individuals, and for a short period of time. This, however, is of slight importance. Nothing is more feared by men than death, and yet not a few individuals kill themselves, and eagerly await the moment for doing so. The papers often speak of young people crossed in love who meet death together. From what these persons write after they resolve to die, it appears that they look forward to the day of their death with as much eagerness as if it were their wedding day.

[1] Cf. the works of Tarde, especially *Les lois de l'imitation*, Paris, ed. 1895.

What Castellar writes in regard to Spain, may be said in regard to all other countries. He writes: "The Spanish people may be divided in a general way into two extreme divisions. First, the cities, for the most part progressive and almost Republican; second, the rural districts, which, owing to the fixity of the daily laborer, he being attached to the soil like a vegetable, as well as to the worship of tradition, are very conservative and reactionary. Every city, on account of its progressive spirit, looks toward the future, but the country, with this spirit of fixity, remains faithful to tradition."[1] This much is plain: if it were possible to put these peasants in contact with new political and social ideas, as it is in the cities, no difference would be found between the two populations. As it is with political and social ideas, so is it with all progressive ideas, economic, moral, etc.

The soldiers of Cromwell had to be stationed at Aberdeen before the inhabitants could learn how to plant cabbages and to make shoes.[2] Just as only a few of the plants and animals found in a civilised country are indigenous, so it is with scientific and industrial discoveries. The majority of them are due to the fact of their having been imported. The more individuals are brought in contact with each other, the more their needs are stimulated and their ideas exchanged, which things taken together urge them to new steps on the highway of social progress.

The United States are rich and highly civilised, not on account of a predominant race, but because their population is a mixture of all the nationalities of the world. Individuals who emigrate carry with them a certain amount of useful knowledge, of which others are ignorant. So the United States have appropriated more than any other country the scientific discoveries of the races of the world. These discoveries brought together give rise to others. According to Edison the United States contain one hundred and fifty real inventors who increase the wealth of the country from five hundred

[1] E. Castellar, "La Politique Espagnole" in the *Revue Politique et Parlementaire*, 1895, p. 227.

[2] Cf., Ch. de Colan, "Les lowlanders et l'histoire d'Ecosse" in *Science Sociale*, neuvième livraison, 1895, p. 254.

million to a milliard of francs per year.[1] Agriculture was more advanced in France under Henry IV. and Louis XIV. than in England. The English learned manufacturing from Flanders, and availed themselves of the experience of Portugal, Holland, and France, in colonisation and navigation. They brought together in their own country the greatest socio-economic conquests made by other countries, and these constituted the natural basis for further advances. The results are well known.

In China many discoveries, among them the most important which have determined European civilisation, were made before they were made by the white race. But they were not completed. It is competition, struggle, developing among individuals through the spirit of emulation exerted to increase individual happiness, which produces the advance of civilisation. Social progress is the sum of individual advances.

Individuals associate in various ways for the purpose of increasing their own welfare by appropriating natural forces in the best possible way, but when a group of individuals unites not to avail itself of natural forces, but to appropriate what other individuals have obtained, this association becomes anti-social, injurious to general welfare, and in the interest of all it should be suppressed. Such associations begin in the form of those called by the specific name, robbers, pass to coalitions of laborers and manufacturers, and end in such undertakings as those of the Panama Company in France, and the Italian organisation of bankers. The latter are as damaging to the development of social prosperity as an association of genuine robbers, disturbing social welfare and tending to destroy it. Being alike, their punishment, from the social point of view, ought to be the same.

VI.

If, instead of comparing the intellectuality of the colored race with that which the white race has acquired, it were possible to take the intellectual development of the white race many years ago,

[1] Cf. J. Novicow, *Les gaspillages dans les sociétés modernes*, Paris, 1894, p. 69.

when the social-economic system was at the same level with that of the real colored races, I am convinced that many of the illusions in regard to the superiority of the white race would be destroyed. The truth is that certain nations belonging to the white race and called superior, have founded civilisations much inferior to the civilisation of the yellow race, or even of the black. There is no people belonging to a race originally superior. There are nations which *under certain conditions* have established empires more powerful, and civilisation more durable than those of other races.[1]

This much is clear: The white peoples have gradually reached a certain degree of civilisation. This civilisation is characterised by intellectual development. Physical force has remained constant. A Hottentot has perhaps greater physical strength than a Parisian, but can it be admitted that the superior intellectual power of the European was of sudden birth? This is not admissible, because civilisation which is its reflex, has progressed slowly, sometimes receded, through long periods of time. The intelligence of the white race is, I repeat, a product of development.

The famous theory of cranial capacity has had many denials. However, it may be affirmed that in general the cranial capacity of the whites is somewhat greater than that of the colored races. The average cranial capacity of the Indo-European is said to be 1,534 grams, that of the African negro, 1,371 grams, that of the Australian, 1,228 grams. But, even if we admit an intimate relation between the development of the cranial capacity and social progress, that is by no means to admit that the Indo-European has passed suddenly from a low grade of intelligence to that which he possesses to-day. The intellectual conquests which have produced the white man have been gradual and slow. The results of these conquests are consolidated in the human brain. This is due to the well known law of heredity, which is one of the chief supports of the theory of evolution.

No white child has ever been born with a greater intellectual

[1] Leon Metchnikoff, *La civilisation et les grands fleuves*, Paris, 1889; B. Lazare, *op. cit.*

development than that of a negro child. Flechsig, who will be recognised as an authority, declares that a new-born child, especially if its birth has been premature, when the nervous fibres of the brain are almost completely deprived of myelin is exactly like one of the lower animals.[1] Man, in a state of nature, says Fouillée, is like a child, a sensitive, impulsive being.[2] And yet the psychological aptitudes of the child born to civilised parents are enormously greater than those of a savage child. Exaggerating this fact, Mismer writes: "The child of an uncultivated race is obliged to learn everything, while the child of the civilised race has only to remember."[3] It is then absurd to expect that a colored man, brought into a civilised society of whites, should find himself completely adapted to his social environment and proceed to contribute to new scientific discoveries. Not only the psychical but even the physiological superiority of the white man has been slowly acquired.

It is due chiefly to the fact that owing to the geographical position which the white man occupies, he is compelled continually to struggle with other men. On the other hand, the colored race contend chiefly against their natural environment. The white man, brought into contact with other societies, develops his power of adaptation to social environment, and that is possible only by the aid of psychic development. But the colored man learns how to adapt himself to his natural environment in a manner truly wonderful. Thus the Boschimans, often exposed to the pangs of thirst learn how to discover the presence of water far under ground. Lying down they detect afar off the rising vapor which to other eyes is imperceptible. The Esquimaux, unacquainted with the use of fire, in order to warm themselves go into a hut of snow. The circulation of the blood becomes there more active than under their thick and heavy clothes. These people pass from a high degree of

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[1] Paul Flechsig, *Gehirn und Seele*, Leipzig, 1895, and the *Revue générale des sciences pures et appliquées*, 1895, p. 790.

[2] A. Fouillée, *op. cit.*, p. 81.

[3] Mismer, *Le monde musulman. Souvenirs de la Martinique et du Mexique pendant l'invasion française*, Paris, Sandoz.

corpulency to a pitiable thinness, according as food is abundant or scarce. The European to-day could never adapt himself to such an uncertain diet. However, in a prehistoric epoch, when his intellectual rank was much lower, he was compelled to undergo the alternation of more and less abundant natural production. These so-called human races are different, because they have undergone different conditions of natural environment, because the competition and the contact between societies and individuals have been different. Wherever there is lacking to a race a true social competition, the intellectual rank is lowered. That does not mean that it could not advance if it were placed in the same condition of life as the white race.

Pearson, Le Bon, and others, ask in dismay: "How shall we stop this flood of colored races which threatens to engulf the white States?"[1] and Fouillée with no less fear remarks: "A colored population doubles in forty years. In China alone there are already four hundred millions. About the middle of the next century there will be eight hundred millions."[2] So these authors are in accord in proposing a great European league of the civilised races for resisting by force the rising tide of colored races. Anything more mean-spirited could not be suggested. We, being separately deficient in physical force and the force of numbers, propose to unite and bring on a struggle with the colored races, availing ourselves of our united superiority. But this is hardly worth considering, for such a precaution would be no precaution at all. With this federation of civilised races we propose to keep the colored races in their own countries. Very well, but will this prevent their increasing rapidly, whatever their condition may be? Then when they have reached an enormous number, much greater than at present, what is to prevent this vast and savage population from falling upon the civilised world and destroying it? To-day this is not a real danger, but it

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[1] Pearson, *National Life and Character*, London, 1893; G. Le Bon, *Les civilisations de l'Inde*, Paris, 1890.

[2] It may be noted incidentally that these calculations have no scientific value whatever. Variations in population cannot be foreseen, especially in countries poor and uncivilised.

may become a reality. If the whites are superior to the colored races, it is with this superiority that they must conquer.

Let us now see what would be the result if the white races should attempt to assimilate the colored. It would certainly result in a betterment of the economic condition of the latter. Now it is a fact ascertained demographically and shown in the splendid works of Levasseur, Cheysson, Messedaglia, Spencer, and others, that the birth-rate of a people is in inverse ratio to its economic welfare. In proportion as the latter increases, the birth-rate diminishes. The colored races brought into contact with the whites ought, therefore, to diminish their actual birth-rate.

Qualenno has written that the colored immigrants in the United States are diminishing. This is not true, they are increasing. But it is true that proportionally their increase is inferior to that of the rest of the population. This fact is proved by the data of the last census. See then to what the much feared prolificacy of the colored races reduces itself when they are brought into contact with the whites. The colored races which are quite uncivilised cannot resist the whites in the social competition. The Oceanic race, confronted by the European, melts from sight. The Indians of America are diminishing in number every day, in spite of the protection afforded by the English Government and by that of the United States. In the Sandwich Islands, Cook, about the end of the last century, found a population of three hundred thousand. To-day there are only forty thousand.

Even if in Europe immigration were left perfectly free to the colored race, it will diminish in number, and will be unable to resist our social competition. This is the opinion expressed by Elisée Reclus.

The Chinese gradually, and perhaps less rapidly than the Japanese, are assimilating many European discoveries. Consequently, the commerce of China, in spite of war and the devastations caused by cyclones in the South, and the pest at Canton and Shanghai, is gradually increasing. The duties collected on imports amounting to 122,500,000 hiahram tačls (a tačl equals £4 12s.) have reached an excess over those of 1893 of more than half a million. The ex-

ports have increased from 116,600,000 to 128,100,000. These include cotton, black tea, tea in bricks, raw white silk, oil, furs, and wool. And the Chinese are increasing prodigiously the importation of machinery as rapidly as the government removes the restrictions. With the increasing competition between individuals, the standard of life of this people has been considerably modified. This fact is increasing their intellectual development.

That which is improperly called a race is never an ethnological unit, but an historical, intellectual, or moral unit. It is so of the Chinese, of the Japanese, and of other colored races. In contact with European life, these races are visibly modified. When they enter the numerous relations of exchange with civilised people, that means that general welfare will be increased. The natural energies of the globe will be better utilised for humanity than they are now. Various human associations are formed for increasing the comfort of individuals, and for rendering labor more productive.

Why should the colored races be the declared enemies of the whites, or *vice versa*? Does this increase their welfare or their wealth? Not in the least. On the contrary, it diminishes it. "Evil," says Bentham, "in the last analysis, of whatever kind it may be, is pain or loss of pleasure."[1] Then why should not these people unite in order to aid each other in the labor of production? Is the color of skin an impediment?

The Chinese emigrate willingly to the United States. In the last few years they have formed a colony of 100,000 individuals. These Chinese go to the United States because they find it profitable to do so. If the proprietors of manufactories employ them, that means that they find their labor useful. One fine day the government at Washington restricts the immigration of the Chinese. It has yielded to a coalition of laborers, which, as we have seen, is the negation of all sense of justice. Such action on the part of the Government at Washington surely does not increase the welfare or the wealth of the United States, and it opens the way for the same restrictions against the Italians and all other immigrants who

[1] J. Bentham, *Works*, French translation, Brussels, 1842, Vol. I., p. 262.

will accept a low wage. Some time it may reach the stage of forbidding all immigration, to which the United States owes its greatness. How their prosperity would be diminished by such an act, or by any other social-economic exclusiveness! It would diminish the welfare of the very ones who think they would be benefited.

See how Chinese exclusiveness has condemned that people to continuous poverty. Men are not born to fight each other, and to rob their neighbors. Let this be done by barbarous people who do not know how to work. People who have arrived at a certain degree of mental development know that the true source of social welfare is the production of wealth obtained by means of labor. Now the productivity of labor is enormously increased by association, and by the assistance of the discoveries of science. If the white people should give direction to the labor of the colored races, the welfare of both will be increased, and in the long run all the differences and prejudice of the different races will disappear.

To-day a good is mistaken for an evil. A colored laborer offers his work for a low wage. Is it not true that so far as the white race is concerned this is just so much gain? When the intellectual development of a colored laborer has increased and he demands a higher salary, perhaps this question may be looked at in a different way.

The conflict of races, of societies, of classes, etc., is only a manifestation of the spirit of exclusiveness. Individuals instead of working and associating their labor for increasing their welfare, contend against each other. They are deluded into thinking that the spoliation of others and the transforming of themselves into parasites increases their welfare. These antagonisms of races, of societies, of classes, in reality are attempts to transform themselves into parasites or to react against social parasitism.

The Roumanians struggle against the Magyars because they are despoiled by them in a most shameful manner. The southern States of the North American union wished to separate from the northern for the same reason. This parasitism would never have produced the loss of sixty-two milliards, which is the sum at which the damages occasioned by the War of Secession are estimated.

The spirit of exclusiveness finds its natural basis in ignorance, in blind individualism. The cautious human egoist sees that the only source of welfare and of wealth is labor, and for two individuals who find it profitable to work together in order to increase their mutual welfare, diversity of race, of color, of form of the head, of nationality or social class, constitute no impediment. If all men are once convinced of this truth then the spirit of exclusiveness will disappear. Then in sociology the question of the origin of races and of civilisations will no longer command the same interest as to-day.

G. FIAMINGO.

ROME.

THE MYTHOLOGY OF BUDDHISM.

BUDDHISM is of all religions the most elaborate as a system of thought. It offers a complete philosophy, which is an outspoken positivism with decidedly anti-metaphysical tendencies. It propounds a psychology which is worked out in its most important details, and is quite up to date. Its morality possesses a definite method, showing upon philosophical principles the baselessness of hatred and proclaiming the maxim of universal love; and, in addition to all this, Buddhism has developed an exuberant mythology.

PURE BUDDHISM.

Buddhism is the religion of salvation through enlightenment, and its tenets are briefly summed up in the four noble truths.

The first noble truth is the recognition of the existence of suffering, as an intrinsic and not merely accidental feature of life.

The second noble truth states that the origin of suffering is the craving or clinging that clamors for the gratification of desire; it is the pursuit of pleasure, the yearning for the Vanity Fair of life, the lust of the senses, and the infatuation of all selfish conceits.

The third noble truth is devoted to the emancipation from suffering by a radical abandonment of craving. It teaches that salvation is obtained by cutting off the thought of self and all its egotistic yearnings.

The fourth noble truth points out the way to emancipation, which consists of (1) right comprehension; (2) right aspirations; (3) right speech; (4) right conduct; (5) right living; (6) right endeavor; (7) right self-discipline; and (8) the attainment of the right bliss.

The word "right" is purposely repeated to emphasise that not every aspiration or endeavor, however well meant, can lead to emancipation, but only the right one, only that one which is based upon a true conception of the nature of existence and the impermanence of all compound things. There is nothing in the world that deserves attachment, for nothing is lasting, not even the great world-systems, not even the gods. Man himself is not permanent, and his soul does not consist of a permanent and immutable self or an âtman, as the Brahmans call it. Every man in his individual existence is the summed-up result of the deeds done in this and in former lives. His character consists in, and is determined by, his deeds, and according to his deeds his character will endure in after life.

Yet while the individual incarnation, being a material compound, is not permanent, man can attain to that which is permanent; and the permanent, the indestructible, the deathless is, in a word, called Bôdhi. Bôdhi is enlightenment; it is the attainment of truth; it is the recognition of that which is eternal. He who attains to enlightenment has become an incarnation of the Bôdhi; he has become a Buddha and has reached Nirvâna, the state of immortality, the highest bliss, in which all craving and all attachment to anything impermanent, has ceased.

This is, in brief outline, the sum total of the Buddhist doctrine, which has been realised in the lives of many Buddhist saints, worked out in detail by Buddhist scholars, popularised by poets in Jataka tales and mythological descriptions, and represented by artists in sculpture and in painting.

MÂRA, THE EVIL ONE.

The many-sidedness of Buddhism is well illustrated in the Buddhistic conception of evil and of a final escape from evil, which is taught to the thinker in the shape of a philosophy, and to the uneducated masses in the garb of a poetical myth, affording the artist a good opportunity for representing deep thoughts in allegorical form.

Evil is personified in Mâra, the Buddhist Devil, who represents temptation, sin, and death, while the final escape from evil, the nirvanic conditions of mortals who are humbler than Buddha himself, found expression in the belief that all good Buddhists would be reborn in the Western Paradise.

Mâra is identified with Namuche, one of the wicked demons in Indian mythology with whom Indra struggles. Namuche is the mischievous spirit who prevents rain and produces drought. The name Namuche means "not letting go the waters." However, Indra, the god of thunder-storms, forces him to surrender the fertilising liquids and restores the life-bringing element to the earth.

Mâra is also called Pâpîyân[1] the Wicked One or the Evil One, the Murderer, the Tempter, in addition he is said to be Varsavarti,[2] meaning "he who fulfils desires." Varsavarti, indeed, is one of his favorite names. In his capacity as Varsavarti, Mâra personifies the fulfilment of desire or the triple thirst,[3] viz., the thirst for existence, the thirst for pleasure, the thirst for power. He is the king of the Heaven of sensual delight.

There is a deep truth in this conception of Mâra as Varsavarti. It means that the selfishness of man is Satan and the actual satisfaction of selfishness is Hell.

This reminds us of one of Leander's *Märchen*, in which we are told that once a man died and awoke in the other world. There St. Peter appeared before him and asked him what he wanted. He then ordered breakfast, the daily papers, and all the comforts he was accustomed to in life, and this kind of life lasted for many centuries until he got sick of it and began to swear at St. Peter and to complain of how monotonous it was in Heaven, whereupon St. Peter informed him that he was in Hell, for Hell is where everybody has

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[1] *Pâpîyân* means "more or very wicked;" it is the comparative form of the Sanskrit *pâpin*, wicked.

[2] *Varsavarti* is Sanskrit. The Pâli form is *Vasavatti*, derived from *vasa*, wish, desire. Childers explains the word as "bringing into subjection." Mâra is also called Paranimmita Vasavattî, which means "bringing into subjection that which is created by others."

[3] Pâli, *tanhâ;* Sanskrit, *trishnâ*.

his own sweet will, and Heaven is where everybody follows God's will alone.

In the Dhammapada, Mâra is not so much a person as a personification. The allegorical nature of the Evil One is plainly felt in every passage in which Mâra's name occurs. We read, for instance:

"He who lives looking for pleasures only, his senses uncontrolled, immoderate in his food, idle and weak, him Mâra will certainly overthrow as the wind throws down a feeble tree."

LAKSHMI, THE GODDES OF BEAUTY.
(Musée Guimet.)

Buddhist artists employed at the same time, as symbols of evil, all those mythological personages who, to the minds of the Indian people, represent sensuality, cruelty, and destruction. Lakshmi, the goddess of beauty, who, according to the Mahâbhâvata, originated like Aphrodite, from the froth of the ocean, remained the ideal of womanhood and conjugal love, while Kâlî, the goddess of the hundred names, represented the ruthless cruelty of nature's laws.

Kâlî is, in spite of her horrible appearance, one of the greatest goddesses of India, who is worshipped among the Hindus even to-day under various names and forms. As the consort of Shiva she is called Pârvatî, the blessed mother; as Durgâ (which means "hard to go through") she symbolises all kinds of danger and is regarded as the goddess of war. As Kâlî she is identified with time, the all-devourer, and is pictured as enjoying destruction, perdition, and

murder in any form, trampling under foot even her own husband. There is scarcely a village without a temple devoted to her, and her images can be seen in thousands of forms. Her appearance is

KALI.
After an Indian picture. (Reproduced from Schlagintweit.)

pleasant only as Pârvatî, in all other shapes she is frightful, and we can perfectly well understand that among Buddhists her divinity changed into the awful features of a demon of evil.

When Buddha went to the Bo-tree Mâra, the Evil One, proposed to shake his resolution, either through the allurements of his daughter or by force. "He sounded the war cry and drew out for battle." The earth quaked, when Mâra, mounted on his elephant, approached the Buddha. The gods, among them Sakka, the king of the Gods, and Brahma, tried to stay Mâra's army, but none of them was able to stand his ground, and each fled straight before him. Buddha said:

"'Here is this multitude exerting all their strength and power against me alone. My mother and father are not here, nor my brother, nor any other relative. But I have these Ten Perfections, like old retainers long cherished at my board. It therefore behooves me to make the Ten Perfections my shield and my sword, and to strike a blow with them that shall destroy this strong array.' And he remained sitting, and reflected on the Ten Perfections."—*Buddhism in Translations*. By H. C. Warren, pp. 77–78.

Mâra caused a whirlwind to blow, but in vain; he caused a rain-storm to come in order to drown the Buddha, but not a drop wetted his robes; he caused a shower of rocks to come down, but the rocks changed into bouquets; he caused a shower of weapons —swords, spears, and arrows—to rush against him, but they became celestial flowers; he caused a shower of live coals to come down from the sky, but they, too, fell down harmless. In the same way hot ashes, a shower of sand, and a shower of mud, were transmuted into celestial ointments. At last he caused a darkness, but the darkness disappeared before Buddha as the night vanishes before the sun. Mâra shouted: "Siddhattha, arise from the seat. It does not belong to you. It belongs to me." Buddha replied: "Mâra, you have not fulfilled the ten perfections. This seat does not belong to you, but to me, who have fulfilled the ten perfections." Mâra denied Buddha's assertion and called upon his army as witnesses, while Buddha declared: "I have no animate witnesses present;" but, stretching out his right hand towards the mighty earth, he said: "Will you bear me witness?" And the mighty earth thundered: "I bear you witness." And Mâra's elephant fell upon its knees, and all the followers of Mâra fled away in all directions. When the hosts of the gods saw the army of Mâra

MARA'S ARMY.
Gāndhāra sculptures Museum of Lahore. (Reproduced from Grünwedel.)

flee, they cried out: "Mâra is defeated! Prince Siddhattha has conquered! Let us celebrate the victory!"

When Buddha had attained enlightenment, Mâra tempted him him once more saying:[1]

"Pass away now, Lord, from existence! Let the Blessed One now die! Now is the time for the Blessed One to pass away!"

Buddha made reply as follows:

"I shall not die, O Evil One! until not only the brethren and sisters of the order, but also the lay-disciples of either sex shall have become true hearers, wise and well trained, ready and learned, versed in the Scriptures, fulfilling all the greater and the lesser duties, correct in life, walking according to the precepts,—until they, having thus themselves learned the doctrine, shall be able to tell others of it, preach it, make it known, establish it, open it, minutely explain it and make it clear,—until they, when others start vain doctrines, shall be able by the truth to vanquish and refute it, and so to spread the wonder-working truth abroad!

"I shall not die until this pure religion of mine shall have become successful, prosperous, wide-spread, and popular in all its full extent, until, in a word, it shall have been well proclaimed among men!"

Buddhist artists represent Mâra always as present among the audience wherever Buddha preaches or teaches. When, shortly before Buddha's death, Mâra repeated his words as quoted above, "Pass away now, Lord, from existence," Buddha answered:

"Make thyself happy; the final extinction of the Tathâgata shall take place before long."

MÂRA IN BUDDHIST ART.

The development of art in India begins and ceases with the ascendancy of Buddhism. It covers about one thousand years, beginning with the third century before Christ and ending with the seventh century after Christ. The inscriptions of Ashoka belong to the oldest Indian monuments we possess, and in all Indian art we can trace the influence of the neighboring Persians and Greeks.

The Gândhâra Buddhistic art represented Buddha in all the various phases of his life, especially his birth, the attainment of Buddhahood under the bo-tree, and his entering into Nirvâna. In

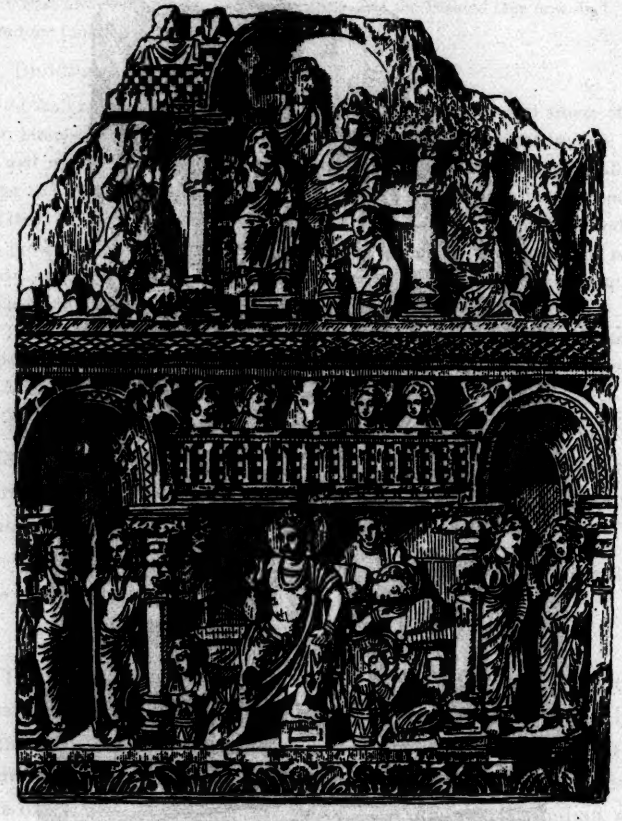
[1] See the Mahaparanibbana Sutta, III., 43–63, *Sacred Books of the East*, XI., p. 53, and *The Gospel of Buddha*, Chap. 94, vv. 9 ff.

addition to these three turning-points in his life, he is represented as the teacher, and there are innumerable illustrations of the many parables and Jataka tales with which he adorned his doctrines.

SCENES FROM BUDDHA'S LIFE.
Gāndhāra sculptures. (Reproduced from Grünwedel.)

In the various sculptures of Buddhistic art there is a figure holding in his hand a kind of double club or vajra—i. e., thunderbolt, as it is usually called. Since the expression of this man with

the thunderbolt decidedly shows malevolence, the interpretation naturally suggested itself that he must be one of Buddha's disciples who was antagonistic to his teachings. The common explanation of this figure, accordingly, designated him as Dêvadatta, the Bud-



SCENES FROM BUDDHA'S LIFE.
Gândhâra sculptures. (Reproduced from Grünwedel.)

dhistic Judas Iscariot, who endeavored to found a sect of his own, and who according to Buddhistic legends is represented as an intriguer bent on the murder of Buddha. The various representations of this figure, however, are not altogether those of a disciple who tries to outdo Buddha in sternness and severity of discipline,

but frequently bear the character of a Greek faun, and resemble, rather, Silenus, the foster-father of Bacchus, representing all kinds of excesses in carousing and other pleasures. Moreover, the same figure with the thunderbolt appears in representations of Buddha's entering Nirvâna, at a time when Dêvadatta had been long dead. Alfred Grünwedel, for these reasons, proposes to abandon the tra-

BUDDHA, TEMPTED BY MARA'S DAUGHTERS.
Gândhâra sculptures. (Reproduced from Grünwedel.)

ditional interpretation of the thunderbolt-bearer as Dêvadatta, and it appears that he has found the right interpretation when he says:[1]

"This figure which accompanies Buddha from the moment he leaves his father's house until he enters Nirvâna, and who waylays him in the hope of awakening in him a thought of lust or hatred or envy, who follows him like a shadow, can be no one but Mâra Pâpîyân, the Wicked One, the demon of passion. The thunderbolt in Mâra's hand is nothing but the old attribute of all Indian gods. In his capacity as the god of pleasure, Mâra is especially entitled to this attribute of the Hindu gods. As Vasavatti he reigns in the highest domain of the pleasure heaven, surrounded by dancing girls and musicians."

[1] *Buddhistische Kunst in Indien.* Berlin: Spemann, p. 87.

It seems probable that the contrast in which Mâra or Varsavarti stands to the Buddha began by and by to be misunderstood. For the thunderbolt-bearer Vajrâpani is gradually changed into a regular attendant of Buddha, and the Vajra, or thunderbolt, is now interpreted as an attribute of Buddha himself. Thus it happened that among the northern Buddhists the Vajra became the indispensable attribute of the lamas. It is called Dorje in Tibet and Ojir in Mongolia.

The attack of Mâra upon Buddha under the bo-tree is a favorite subject of Buddhist artists, who gladly avail themselves of this opportunity to show their ingenuity in devising all kinds of beautiful and hideous shapes. Beautiful women represent the temptations of the daughters of Mâra (see cut on page 427), and the hideous monsters describe the terrors of Mâra's army (see cut on page 423).

In Buddhistic mythology Mâra, the Evil One, is, in harmony with the spirit of Buddha's teachings, represented as the Prince of the World. It is Mâra who holds the wheel of life and death (*Chavachakra*, i. e., wheel of becoming) in his hands, for all living beings reside in the domain of death. The hand of death is upon every one who is born. He is the ruler in the domains of the nidânas, the twelve links of the chain of causation, or dependent origination.

In this conception Mâra is represented as a powerful demon holding in his clutches the whole world of heaven, earth, and hell.

THE TWELVE NIDANAS.

The twelve nidânas are a very old doctrine, which possibly goes back to Buddha himself, and may contain elements that are older. While the general meaning of the chain of causation is clearly indicated by the first and last links, which imply that ignorance, not-knowing, or infatuation is at the bottom of all evil, there are great difficulties in the interpretation of the details, and Mr. Warren thinks that it is a combination of two chains of causation representing similar thoughts. He says:

"The Buddhist Sacred Books seem to claim Dependent Origination as the peculiar discovery of the Buddha, and I suppose they would have us understand

that he invented the whole formula from beginning to end. But it is to be observed that the formula repeats itself, that the human being is brought into existence twice —the first time under the name of consciousness and name and form and by means of ignorance and karma, the second time in birth and by means of desire (with its four branches called attachments) and karma again, this time called existence.[1] Therefore, though Buddhaghosa is at great pains to explain this repetition as purposely intended for practical ends, yet one is much inclined to surmise that the full formula in its present shape is a piece of patchwork put together of two or more that were current in the Buddha's time and by him—perhaps expanded, perhaps contracted, but at any rate made into one. If the Buddha added to the formula of Dependent Origination, it would appear that the addition consisted in the first two propositions. For ignorance, of course, is the opposite of wisdom, and wisdom is the method for getting rid of ignorance."—*Buddhism in Translations*, p. 115.

Whatever may have been the original wording, the traditional formula of the causation of evil has been, without change, faithfully preserved in the triumphal progress of Buddhism from India to Japan. One of the oldest passages of the twelve nidânas is found in the *Questions of King Milinda*, p. 79, where we read:

"By reason of ignorance came the Confections, by reason of the Confections consciousness, by reason of consciousness name-and-form, by reason of name-and-form the six organs of sense, by reason of them contact, by reason of contact sensation, by reason of sensation thirst, by reason of thirst craving, by reason of craving becoming, by reason of becoming birth, by reason of birth old age and death, grief, lamentation, sorrow, pain, and despair. Thus is it that the ultimate point in the past of all this time is not apparent."—Translated by T. W. Rhys Davids in *Sacred Books of the East*, Vol. XXXV.

The Saṃyutta Nikâya replaces the second nidâna "confections" by "karma," i. e., action. The passage reads:

"On ignorance depends karma;
"On karma depends consciousness;
"On consciousness depend name and form;
"On name and form depend the six organs of sense;
"On the six organs of sense depends contact;
"On contact depends sensation;
"On sensation depends desire;
"On desire depends attachment;
"On attachment depends existence;

[1] The Visudhi Magga declares karma-existence is equivalent to existence.

"On existence depends birth;

"On birth depend old age and death, sorrow, lamentation, misery, grief, and despair. Thus does this entire aggregation of misery arise.

"But on the complete fading out and cessation of ignorance ceases karma;

"On the cessation of karma ceases consciousness;

"On the cessation of consciousness ceases name and form;

"On the cessation of name and form cease the six organs of sense:

"On the cessation of the six organs of sense ceases contact;

"On the cessation of contact ceases sensation;

"On the cessation of sensation ceases desire;

"On the cessation of desire ceases attachment;

"On the cessation of attachment ceases existence;

"On the cessation of existence ceases birth;

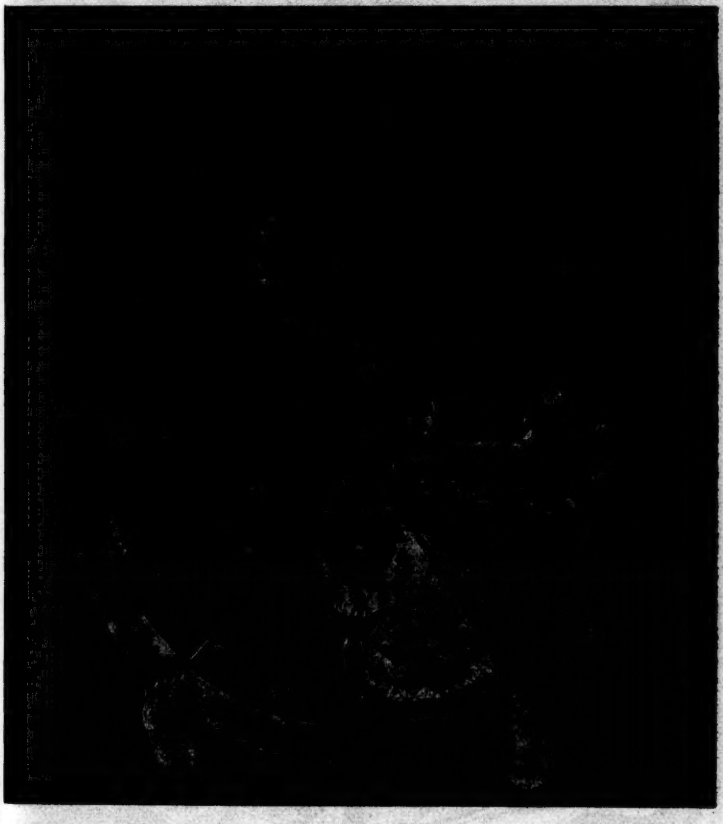
"On the cessation of birth cease old age and death, sorrow, lamentation, misery, grief and despair. Thus does this entire aggregation of misery cease."—*Buddhism in Translations*, Warren, p. 166.

The Pâli terms are: (1) *avijja* (ignorance), (2) *sankhâra* (organised formation) or *kamma* (Karma), (3) *viñnana* (sentiency), (4) *nama-rupa* (name and form, i. e., individuality), (5) *salâyatana* (the six fields, i. e., the five senses and mind), (6) *phasso* (contact), (7) *vêdana* (sensation), (8) *tanha* (thirst), (9) *upâdâna* (craving), (10) *bhava* (growth), (11) *jâti* (birth), (12) *jarâmarana*, etc. (old age, death, sorrow, etc.).

It seems that we have three chains of causation combined into one. One chain explains that Karma, i. e., deed or activity, produces first *viñnana* (sentiency), and then *nama-rupa* (name and form, or personality); the other begins with sensation, as known in the six senses or *salâyatana*, which by contact (*phasso*) produces first consciousness (*vêdana*) and then thirst (*tanha*). The third group, which may be the peculiarly Buddhistic addition to the two older formulas, is founded in the first, or first and second, and the four concluding links of the traditional chain, stating that ignorance (*avijja*) produces blindly in its random work organisations (*sankhâras*). These sankhâras or elementary organisms are possessed of craving (*upâdâna*), which leads to conception (*bhava*) and birth (*jâti*), thus producing old age, death, sorrow, and misery of any kind.

THE WHEEL OF LIFE.

Judging from a communication of Caroline A. Foley (in the *Journal of the Royal Asiatic Society*, 1894, p. 389), the allegory of



AN INDIAN WHEEL OF LIFE.
Preserved in the Cave Temples of Ajanta, Central India.
(Reproduced from L. E. Waddell's picture in the J. R. A. S.)

the world-wheel, the wheel of life, must be much older than is commonly thought, for it is mentioned already in the *Divyâvadâna*, pp. 299–300. Caroline Foley says:

"There it is related how Buddha instructed Ananda to make a wheel (*cakram kârayitavyam*) for the purpose of illustrating what another disciple, Maudgalyâ-

yana, saw when he visited other spheres, which it seems he was in the habit of doing. The wheel was to have five spokes (*pancagandakam*), between which were to be depicted the hells, animals, pretas, gods, and men. In the middle a dove, a serpent, and a hog, were to symbolise lust, hatred, and ignorance. All round the tire was to go the twelve-fold circle of causation (*pratityasamutpâdo*) in the regular and in the inverse order. Beings were to be represented 'as being born in a supernatural way (*aupapâdukah*), as by the machinery of a waterwheel, falling from one state and being produced in another.' The wheel was made and placed in the 'grand entrance gateway' (*dvârakoshtake*), and a bhikshu appointed to interpret it."

Samsâra, or the circuit of life, the eternal round of birth, death, and rebirth, as summarily expressed in the doctrine of the twelve nidânas or twelve-linked chain of causation, is painted around the tire of the wheel.

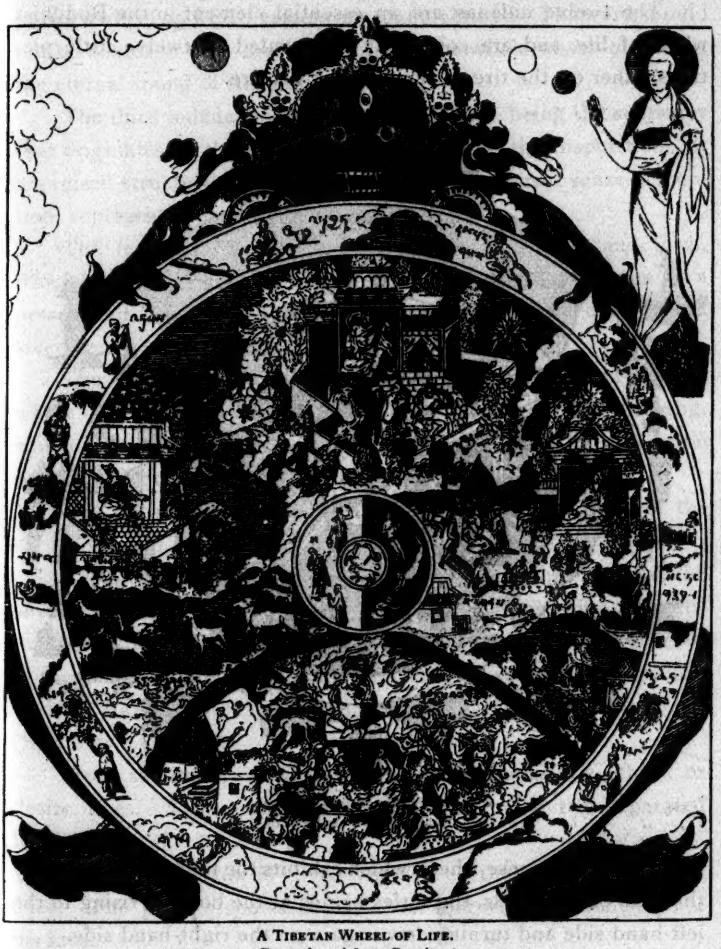
How carefully the Buddhistic conception of Mâra, as the Prince of the World, holding in his clutches the wheel of life, has been preserved, we can learn from a comparison of an old fresco in the deserted caves of Ajanta, Central India,[1] with Tibetan and Japanese pictures of the same subject.[2] All of them show in the centre the three causes of selfhood, viz., hatred, spite, and sloth, symbolised in a serpent, a cock, and a pig. They are called the three fires, or the three roots of evil, which are *raga* (passion), *doso* (sin), *moho* (infatuation). The Hindu picture exhibits six divisions—the realm of gods, the realm of men, the realm of nâgas (or snakes),[3] the realm of paradise, the realm of ghosts, and the realm of hell. The Tibetan picture shows the same domains, only less distinctly separated, while the Japanese picture shows only five divisions. In order to show the omnipresence of the Buddha as the principle that sustains all life, the Japanese picture shows a Buddha statue in the hub, while in the Hindu wheel every division contains a Buddha

[1] Described by L. A. Waddell, M. B., M. R. A. S., in the *Journal of the Royal Asiatic Society*, April, 1894.

[2] The Tibetan and Japanese pictures are explained by Professor Bastian in his *Ethnologisches Bilderbuch*.

[3] We must remember that in some parts of India the serpent is the symbol of perfection and wisdom,—a belief which was adopted by the Ophites, a gnostic sect which revered the snake of the Garden of Eden as the instructor in the knowledge of good and evil and the originator of science.

figure. This Buddha in the world is the Buddha of transformations, *Nirmâna-Kâya*, representing the tendency of life toward enlightenment. Outside of the wheel two other Buddha figures appear. At



A TIBETAN WHEEL OF LIFE.
(Reproduced from Bastian.)

the right-hand corner there is Buddha, the teacher, in the attitude of expounding the good law of righteousness. It is the *Dharma-Kâya*, the Buddha embodied in the dharma, i. e., the law, religion,

or truth. In the left-hand corner there is Buddha in the state of rest, represented as *Sambhoga-Kâya*, the Buddha who has entered into Nirvâna and attained the highest bliss.

The twelve nidânas are an essential element in the Buddhist wheel of life, and are commonly represented by twelve little pictures either on the tire or surrounding the tire.

A Japanese Wheel of Life.
(Reproduced from Bastian.)

On the Japanese wheel, which exhibits the nidânas more clearly than the older wheels, the series begins at the bottom, rising to the left-hand side and turning down again on the right-hand side.

The first nidâna (in Pâli *Avijja*), ignorance, is pictured as a passionate man of brutish appearance.

The second nidâna (in Pâli *Sankhâra*, Sanskrit *Samskâra*), which is commonly but badly translated in English by "confection,"

represents the ultimate constitutions of life or primary forms of organisation, meaning a disposition of structures that possess the tendency to repeat a function once performed. It is represented as a potter's wheel on which vessels are manufactured. The word should not be confused with *samsâra*, which is the whole wheel of life, or the eternal round of transmigration.

The third nidâna is viññâna, or awareness, being the sentiency that originates by the repetition of function in the dispositions or organised structures previously formed. It is animal sense-perception, represented as a monkey.

The fourth nidâna is "nama-rupa," i. e., name and form, which expression denotes what we call personality, the name of a person and his personal appearance. It is represented by a pilot steering a boat.

The fifth nidâna is called the six fields or "shadâyatana," which are what we call the five senses and mind, or thinking, which is considered by Buddhists as a sixth sense. It is pictured as a human organism.

The sixth nidâna is phasso or sparsa, i. e., the contact of the six fields, with their objects, represented as a lovers' embrace.

Rising from a contact of the six fields with their objects, the seventh nidâna is produced as Vêdâna, i. e., sensation or sentiment, illustrated by a sighing lover. If the sixth nidâna is enacted in the garden scene of Goethe's "Faust," the seventh is characterised by Margaret's song, "My peace is gone, my heart is sore." (Scene xv.).

From sentiment, as the eighth nidâna, tanha, i. e., thirst or desire, rises. The picture exhibits the flirtation of two separated lovers.

The ninth nidâna is "upâdâna," i. e., the clinging to existence. The picture shows us the lover following the footsteps of his love.

The tenth nidâna is "bhava" (bridal embrace), or existence in its continuation, finding its artistic expression in the union of the lovers, who, seated on the back of an elephant, are celebrating their marriage feast.

The eleventh nidâna is birth, "Jâti," in the picture represented as a woman in her throes.

The remaining groups represent the twelfth nidâna and its various sufferings, which consist of old age, disease, death, lamentation, complaints, punishments, and all kinds of tribulations.

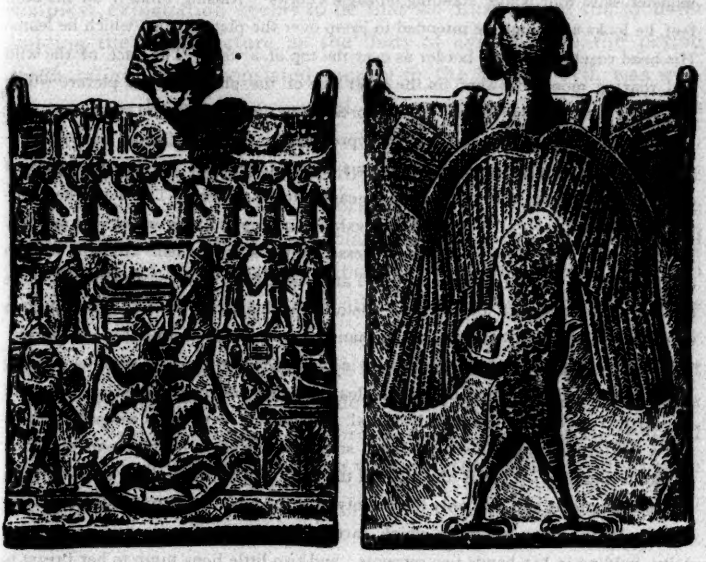
Above the wheel of selfhood, which is the hell of worldliness, appears the spotless disc of Nirvâna.

The twelve pictures on the Hindu wheel are less distinct, but there is no question about their meaning being exactly the same. Beginning at the top on the right-hand side, we find first an angry man, representing ignorance, then a figure which might be a potter forming vessels of clay on the potter's wheel, representing the formation of dispositions or primary soul-forms. The third picture represents a monkey climbing a tree, symbolising animal perception or the individuality of organisms. The fourth picture shows a ship on a stream, representing the origin of mind under the allegory of a pilot. The fifth picture seems to be a house built upon five foundation stones, which we interpret as the five senses, the superstructure representing mind, the sixth sense. Then follows the sixth picture, a woman, kindling desire of contact. The seventh represents sentiment in the shape of two sighing lovers. The eighth picture represents thirst or desire as two separated lovers. The ninth picture, reminding us of Adam and Eve in Paradise, is a man plucking flowers or fruits from a tree; it illustrates the tasting of the apple of sexual love. The tenth picture illustrates pregnancy, the eleventh birth, and the twelfth is the demon of death carrying away the white body of a dead man.

AN ANCIENT CHALDEAN WORLD-PICTURE.

The wheel of life as now frequently pictured in Buddhist temples of Japan can, in its wanderings from India through Tibet and China, be traced back to a remote antiquity, for we know positively that this conception of the Evil One in his relation to the world, existed about two thousand years ago, in the days when Buddhism still flourished in India, but it is not improbable that it must be dated back to the times before Buddha. We may fairly assume

that when Buddha lived, such or similar representations of the significance of evil in life existed and he utilised the traditional picture for the purposes of spreading his own religion, adding thereto his own interpretation, and thus pouring new wine into old bottles. There is a possibility that the picture must be dated back to the age of demonolatry, when the idea prevailed that the good god need not be worshipped but only the evil god, because he alone is dangerous to mankind.



AN ANCIENT ASSYRIAN BRONZE TABLET REPRESENTING THE WORLD IN THE CLUTCHES OF AN EVIL DEMON.
Collection of M. de Clercq. (After Lenormant.)

Among the Chaldean antiquities, many of which date back to 3,000 B. C. and to still remoter periods, there is a bronze tablet now in the collection of M. De Clercq which represents in a very concise summary the world-conception of the ancient Chaldeans. But the strangest thing about it, to which no Assyriologist has as yet called attention, is that this tablet, depicting the world as it was supposed to be according to the views of the Accadians, Assyrians, and Babylonians is held in the clutches of a monster in

very much the same fashion that the Buddhist wheel of life is handled by Mâra, the Evil One. Lenormant, from whose valuable History of the Orient we reproduce a picture of this bronze tablet, when speaking of the Chaldean ideas of hell, alludes to this curious piece of antiquity and explains the picture as follows:

"A bronze plate in the collection of M. De Clercq contains in a synoptic world-picture a representation of hell, and it is necessary that we here give a description of it. One side of the bronze plate is entirely occupied by a four-footed monster, with four wings, standing on eagle's claws. Raising himself on his hind feet, he looks as though he intended to jump over the plate against which he leans. His head reaches over the border as over the top of a wall. The face of the wild and roaring monster towers, on the other side of the plate, above a picture which is divided into four horizontal strips representing the heavens, the earth, and hell. In the top strip one sees the symbolic representations of the celestial bodies. Underneath appears a series of seven persons clad in long robes and having heads of a lion, a dog, a bear, a ram, a horse, an eagle, and a serpent. These are the celestial genii called *ighigs*. The third strip exhibits a funeral scene, which undoubtedly happens on earth. Two personages dressed in the skin of a fish, after the fashion of the god Anu, are standing at the head and foot of a mummy. Further on there are two genii—one with a lion's head, the other with a jackal's head—who threaten one another with their daggers, and a man seems to flee from this scene of horror. The picture of the fourth strip is bathed in the floods of the ocean, which according to the traditional mythology of the Chaldeans reaches underneath the foundations of the earth. An ugly monster, half bestial, half human, with eagle wings and claws, and a tail terminating in a snake's head, stands on the shore of the ocean, on which a boat is floating. This is the boat of the deity Elippu, frequently mentioned in the religious texts and probably the prototype of the boat of Charon in Greek mythology. In the boat is a horse which carries upon its back a gigantic lion-headed deity, holding in her hands two serpents; and two little lions jump to her breast to suck her milk. In the corner there are fragments of all kinds, human limbs, vases and the remainders of a feast.

"Thus this little bronze tablet contains the picture of the world such as the imagination of the Chaldeans represented it to be: the gods and the sidereal powers, angels and demons, ighigs and anunnaks, the earth and men, with supernatural beings who exercise a direct influence upon them: the dead protected by certain demons and attacked by others according to the philosophical conception of good and evil, and the antagonism of the two principles which constitutes the basis of the Assyrio-Chaldean religion. Anu protects the dead in the same way as does the Egyptian Osiris. There is the subterranean river reminding one of the Styx and Acheron of the Greeks as well as of the subterranean Nile of Amenti." (Pp. 291–292.)

It is a pity that Lenormant does not tell us anything about the significance of the demon who holds this world-picture in his clutches. It would be interesting to understand the thought of the Chaldean artist when giving such prominence to the Evil One.

Religious symbols, formulas, and rites are, as a rule, punctiliously preserved even after a radical change of the fundamental ideas that are embodied therein. Thus this bronze plate may preserve features of a world-representation long gone by; and the simplest explanation seems to be that we must regard the monster holding the world-picture as the deity of evil, who in the period when religion still consisted merely in the fear of evil, was worshipped as the actual prince of the world, and whose wrath was atoned by bloody sacrifices.

Judging, by analogy, from the religious evolution of other nations, we must assume that the original form of worship among the Accadians was as much demonolatrous as it is at a certain stage of civilisation among all savage tribes. If this view should prove to be correct, the Chaldean bronze plate of the monster holding in its claws the world would be the connecting link between the very dawn of religious notions with the foundation of Buddhism, the first among the historical religions now extant that insists on the close relation of religion to morality, proclaiming that salvation from evil can be attained only by him who walks on the noble eightfold path of righteousness.

NORTHERN BUDDHISM.

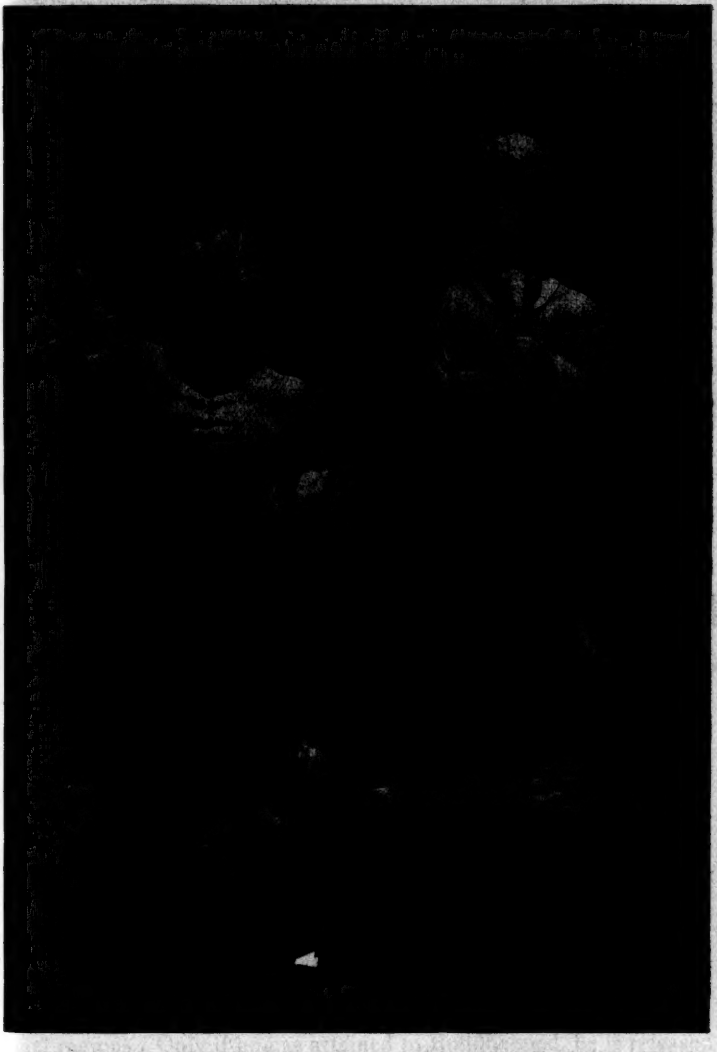
The Buddhism of Tibet is not yet sufficiently explored on account of the inaccessibility of the country, but it is safe to say that its demonology is highly developed and shows traces of strong Hindu influences. Promir nt among the evil spirits is mKha'-sGrôma, who is commonly identified with the Goddess Kali of the Hindus, and is represented as a frightful monster with a leonine head, surrounded by a halo of flames and ready to devour everything she sees.

The religious conditions of China are radically different from

ours. Taoism, Confucianism, and Buddhism exist peacefully side by side, and there is scarcely a home in the country where the customary homage would not be paid to Lao-Tsze and Confucius as

MKHA' SGRÔMA, THE TIBETAN GODDESS KALI.
Tibetan Bronze. (Musée Guimet.)

well as to Buddha. Indeed, there are numerous illustrations in which these three great masters are together represented as dominating the moral life of China. (See *Open Court*, No. 489, p. 90.)



KONGO, THE SHERIFF. EMMA, THE JUDGE.
Carved wood, Japanese. (Reproduced from a Japanese art print.)

In Japan the conditions are similar, except that there Buddhism is more popular and at the same time better represented than in China. Taoism exists in the country of the rising sun only as a

MEIFU, THE DARK TRIBUNAL. (Reproduced from *Karma*.)

philosophy in the pure form of Lao-Tsze's teachings; yet the aboriginal nature-worship of the country, including the observation of patriotic festivals, is still preserved in Shintoism, which has of late been declared to be the official state religion of the country.

The folklore of the Chinese and Japanese was naturally embodied in the mythology of Buddhism, and we find therefore in their descriptions of Hell the figures of *Emma*, the stern judge of Meifu, the dark tribunal; of *Kongo*, the sheriff, and all the terrible staff of bailiffs, torturers, and executioners, among whom *Gozu*, the steer-head, and *Mezu*, the horse-head, are never missing. By the side of the judge's desk stands the most perfect mirror imaginable, for it reflects the entire personality of every being. Since man's personality, according to the Buddhistic soul-conception, is constituted by the deeds done during life, the glass makes apparent all the words, thoughts, and actions of the delinquent who is led before

HO NOKURUMA, THE CART OF HELL.
(After an old Japanese painting.)

it; whereupon he is dealt with according to his deserts. If good deeds prevail, he is rewarded by being reincarnated in a higher state of existence, be it on earth, or in the Western Paradise, or in one of the heavens of the gods; or, if bad deeds prevail, he sinks into lower spheres, in which case he must go back to life in the shape of that creature which represents his peculiar character; or if he has been very wicked, he is doomed to hell, whither he is carried in the *ho nokuruma*, the fiery cart, the conveyance of the infernal regions. Only if he has attained to Buddhahood, he is released from further reincarnation and enters into Nirvâna.

EVIL IN THE SERVICE OF GOOD.

In the later development of Northern Buddhism, all the evils of this world, represented in various devil personalities, are conceived as incarnations of Buddha himself, who, by showing the evil consequences of sin, endeavors to convert mankind to holiness and virtue.

We find in the Buddhist temples of China and Japan so-called Mandaras, which represent the world-conception of Buddhism in its cosmic entirety. The word *Mandara* means "a complete *ensemble*," and it exhibits a systematically arranged group of Buddha-incarnations. The statue of the highest Buddha who dwells in Nirvâna always stands in the centre. It is "Bôdhi," enlightenment, or "Sambôdhi," perfect enlightenment, that is to say, the Truth which is the same for ever and aye. He is personified under the name Amitâbha, which means boundless light, being that something the recognition of which constitutes Buddhahood. He is like God, the Father of the Christians, omnipresent and eternal, the light and life of the world, and the ultimate authority of moral conduct.

The catalogue of the Musée Guimet of Paris, the best religious museum in the world, describes a Mandara, which is the highest Buddha in the centre of the group, surrounded by a number of his incarnations of various degrees and dignities. These are the prophets and sages of the world, who have taught mankind or set them good examples by their virtuous lives. On the right we see a group of personified abstracts,—piety, charity, science, religion, the aspiration for progress. On the left is a third class, consisting of the ugly figures of demons, whose appearance is destined to frighten people away from sensuality, egotism, and evil desires.

The devils of Buddhism, accordingly, are not the enemies of Buddha, and not even his antagonists, but his ministers and co-workers. They partake of Buddha's nature, for they, too, are teachers. They are the rods of punishment representing the curse of sin, and as such may fitly be conceived as incarnations of the

Bôdhi. The Buddhist devils are instruments of education who contribute their share to the general system of working out the final salvation of man.

Christian salvation consists in an atonement of sin through the bloody sacrifice of a sinless redeemer; Buddhist salvation is attained through enlightenment. Hence Christ is the sufferer, the innocent man who dies to pay with his life the debt of others who are guilty. Buddha is the teacher who by example and instruction shows people the path of salvation.

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LITERARY CORRESPONDENCE.

FRANCE.

M. A. Fouillée gives us at one stroke two octavo volumes, *Le mouvement positiviste et la conception sociologique du monde*, and *Le mouvement idéaliste et la réaction contre la science positive*.[1] His aim in these two works has been to build up a "first philosophy" wherein will be harmonised the subjective and objective points of view between which speculation has always oscillated. How has he gone about this synthesis? He does not find it in mechanicalism, for the mechanical order is merely a "silhouette of the universe projected upon our thought," nor in biology, which furnishes us with an incomplete type only of the universe. Sociology alone, he says, can furnish us with a complete type. Comte foreshadowed the idea, but unfortunately, M. Fouillée adds, positivism was restricted to the objective systematisation of facts; it held to the abstract laws of the world, whereas the new idealism seeks in *man* and in *psychical activity* the ultimate explanatory principle, and is bent on representing the world in psychical terms and by means of sociological relations. In short, we have to admit, according to M. Fouillée, the unity of composition of the universe and the psychical character of that unity. Physical energy is accordingly nothing but the outward expression of moral energy, or of the will, which is omnipresent, at once founder and maker of reality. At the bottom of all are found states of consciousness in varying degrees of intensity and combination; universal relations being conceived as the first stage of the most complex relation known to us, namely, social solidarity.

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[1] F. Alcan, publisher.

Two theses, at least, are mingled here, as will be seen. Nevertheless, they may be separated. The universal solidarity of created beings is a legitimate hypothesis, but not now broached for the first time,[1] having been first suggested by astronomy and nowise depending on any particular doctrine of M. Fouillée. On the other hand, the same hypothesis, according to which the universe is resolvable into atoms that are at once matter, life, and mind, does not determine us to accept the reduction of all reality to desire and of all physical energy to states of consciousness. Moreover, I do not see the practical advantages of this mode of viewing things. I do not see what light it throws upon psychology, æsthetics, and morals, nor how it can suffice to explain the relations between subject and object, which it is still best to accept as actual facts, after the manner of everyday experience, or naïve realism. M. Fouillée seems to me to arrive, by a skilful mingling of the doctrines of Plato, Kant, Comte, and Hegel, at a sort of spiritualism without substance, a sort of psychism without soul, a sort of vitalism without organs or environment. And this situation finds expression in his system in the word "idealism,"—an idealism which is epitomised in the concept of the "idea-force," which has always been obscure, seeing that idea and force have here the value of a pure metaphysical entity.

It is an old saying that ideas rule the world, that ideals are the real moving power in social life, And I prefer to hold by this ancient formula, which is not so full of obscurities. The scholarly dialectic of M. Fouillée leads him to some grand deductions (the critical part of his works is quite remarkable), and I should be glad if I could be convinced by them. But I do not feel myself upon sufficiently solid ground to abandon myself to the guidance of so ambitious a master.

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The little volume of M. F. Le Dantec, *Le déterminisme biologique et la personnalité consciente*,[2] carries us singularly far from M.

[1] I find this hypothesis formulated in the *Principes Sociologiques* of M. Ch. Mismer, published about eighteen years ago.

[2] F. Alcan, publisher.

Fouillée. The author has undertaken here to develop the ideas relating to phenomena of consciousness which he had merely touched upon in the last chapter of his *Théorie nouvelle de la vie.* The phenomena of consciousness are for M. Le Dantec epiphenomena. As our readers already know, he very distinctly characterises states of consciousness as "inactive witnesses" of physiological life, wherein everything happens according to the laws of physics and chemistry. But what is consciousness? M. Le Dantec seeks to explain it as he has explained life. With Haeckel he regards consciousness as a property of atoms, and consequently of nervous elements (neura). Our ego would result consequently from the summing up of the epiphenomena which are produced by the activity of the different neura. In short, he takes his stand upon these two hypotheses: (1) that atoms have a fixed and inalienable consciousness for each atomic species; (2) that the atomic consciousnesses are summed up in the molecules, the molecular consciousnesses are summed up in continuous masses of plastic substances, and the plastidiary consciousnesses in the total aggregate of the nervous systems of resultant higher beings. He examines, on the basis of these facts, what elementary consciousness and what summed up consciousness is. Then he studies epiphenomena among polyplastidiary beings and explains them without recourse to the intervention of immaterial principles and without admitting anything which is antagonistic to chemical determinism.

This new book will appear perhaps more hazardous than the former one of M. Le Dantec. But it bears the same ear-marks, and I regard it a remarkable production. The author has frankly entered upon the straight path which leads to discoveries. He has the merit of great precision in analysis and many other qualities which are requisite for attacking difficult problems.

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M. Léon Bourgeois, formerly president of the ministerial council, publishes a short little work, *Solidarité*,[1] which I should not like to omit. Our thanks are certainly due to M. Bourgeois for

[1] A. Colin & Co., publisher.

essaying to find the foundations of a new political code and of a new rational faith which is above current sophisms and prejudices. He has set himself the task of showing the contractual character of social life, and of so justifying, as contrasted with revolutionary anarchy, the notions of duty and legal sanction, and as opposed to conservative routine the necessity of a constant amelioration of human affairs. But he is perhaps mistaken when he talks to us of a "doctrine" of solidarity. Solidarity is simply a fact, a condition of existence, and that condition is the analogue in social life of what we call interdependence of phenomena in the world of physics, chemistry, and astronomy. But this condition is not the only one and cannot accordingly be used in constructing a perfected political doctrine. Nevertheless, I do not deny that it is opportune to place it in relief, to show its effects in human affairs, and to seek, in fine, motives of action in the sentiment which corresponds to the theoretical knowledge of solidarity. And this sentiment is capable of acquiring such a power that every study which aims at illuminating and strengthening it is largely justified by the end which is set.

M. Bourgeois does not attack practical questions in this work, that is to say, does not attempt to carry solidarity over into the real facts, nor to harmonise it with the conditions which proceed from history, race, environment, etc. He does not overlook the latter, however. He recognises, for example, the natural inequality of men, which has always had and always will have grave consequences for the organisation of societies. We should, in fine, encourage him to devote more of his attention to these problems, and especially to disengage them from the errors which the ignorance or violence of parties so easily introduces into them.

* * *

M. J. Novicow publishes under the title of *Conscience et volonté sociales*[1] a very interesting study, in which he analyses the higher manifestations of collective life, showing how they grow, are propagated, and rendered efficacious. This study supposes and confirms

[1] Giard et Brière, publishers.

the "organic" theory of society so fiercely combated in recent years. I have already touched upon this controversy, inclining to the doctrine to which M. Novicow to-day brings valuable support. The doctrine which views society as an organism, does not prevent him from resolving social acts into psychical acts. "Social movements," he writes, "are a totalisation of cerebral and muscular movements and nothing more. Every social act is resolvable into a certain number of psychical acts." And while it is true that "the action of men upon one another does produce a peculiar resultant product," it is also true that social volitions always result from the ideas and internal sentiments of individuals, "and not all from the mere fact that they are associated together."

On the question of determinism M. Novicow is perhaps less precise. He accepts psychical determinism and rejects social determinism. "Social liberty," he says, "remains intact. The actions of men always conform to what appears to them their interest." Which is correct, provided we recognise that individual determinations necessarily find their echo in the collective life. No doubt it is useless to talk of an outward constraint upon society, of a sort of obscure destiny inhering in things; but we should certainly take account of the constraint exercised by accumulated facts—ideas, habits, institutions, etc.—for their succession, which is not at all fortuitous, constitutes precisely what we call the laws of history.

One lesson among many others may be drawn from these studies. It is the necessity even in democracies of an aristocracy, that is to say, of an élite of men sharply differentiated and adapted for the directing and governing function. M. Novicow deduces this lesson from the organic theory, and he supports it upon facts in the solidest way. He proceeds in the same manner and is not less decisive with regard to the current sophisms of "socialism."

I should like to speak at greater length of this work. It is to be recommended for the clearness of view which its author displays, for the sureness of his criticisms, his wealth of information, and for the lofty confidence which he has in the future, while not veiling any of the evils of the present.

A curious little work by M. ROISEL, *L'idée spiritualiste*,[1] sketches with rapid strokes the religions of the world and shows us their inevitable ultimate resolution in a monistic philosophy capable of satisfying at once the needs of reason and the heart. M. Roisel has the merit of being clear and succinct; his erudition is tactfully used. Perhaps he does not cite sufficient proof for his not improbable hypothesis of a "Scythian" culture to which the nations of the dolmens supposedly belong and which is held to have preceded Aryan civilisation. Under the name of Scythism would be classed the doctrine which takes for granted the primordial existence of two coeternal causes: (1) a spirit which exists by itself and alone is active; (2) a matter composed of absolutely passive molecules; the result being that the universe is the product of the constant action of the first principle upon the second. To this doctrine we should have opposed the ontological doctrine of the Aryan mind with its different developments, and the spiritualistic idea which both represent would finally give way before the atomic doctrine which slowly developed by their side and has won the adherence of so many great minds.

I recommend the perusal of this volume, which bears witness to a distinguished mind. The reader will find here, in the first part, enlightened and liberal views upon Judaism and Christianity, for example, and in the second part a very compact criticism of spiritualistic systems, where the logic and common sense of the author easily triumphs over the subterfuges of transcendent dialectics.

* * *

There still remain to be mentioned: *L'immanence de la raison dans la connaissance sensible*, by M. GÉDÉON GORY; *Le socialisme et la science sociale*, by M. GASTON RICHARD, a careful criticism of facts and theories, written with great moderation; *L'éducation intellectuelle dès le berceau*, by M. BERNARD PÉREZ, the concluding volume of a series of works, in which the author displays his oft proved mer-

[1] F. Alcan, publisher.

its; a new edition of the *L'homme de génie*,[1] by M. LOMBROSO; and a translation of *La femme criminelle et la prostituée*, an important work of which I reserve the privilege of speaking again. I have been guilty of neglect also in not mentioning the volume of M. RENÉ WORMS, *Organisme et société*, and in doing so to-day I am sorry I cannot devote to it extended criticism.

LUCIEN ARRÉAT.

PARIS.

[1] George Carré, publisher.—The last works mentioned are published by Felix Alcan.

CRITICISMS AND DISCUSSIONS.

THE THEORY OF MATHEMATICAL FORM.

A CORRECTION AND EXPLANATION.

In his interesting communication to *The Monist* of January last on "The Logic of Relatives," Mr. C. S. Peirce, while alluding in flattering terms to my "Memoir on the Theory of Mathematical Form," takes exception to the opinion, which he conceives to be there put forward, that "a relationship" is "nothing but a complex of bare connexions of pairs of objects," and accordingly states that "while I have learned much from the study of Mr. Kempe's Memoir, I am obliged to modify what I have found there so much that it will not be convenient to cite it, because long explanations of the relation of my views to his would become necessary if I did so."

Any criticism which comes from so distinguished a logician as Mr. Peirce must of course have great weight; but in the present instance I fear that *bonus dormitat Homerus*, for I am confident that I have never held or expressed, either directly or by implication, any such opinion as he attributes to me. On the contrary, I regard it as quite inconsistent with the fundamental principles formulated in the Memoir. I am fully alive to the many defects of my essay, and am glad of this opportunity of expressing my gratitude to Mr. Peirce for a long and valuable letter of criticism, which he sent me on January 17, 1887, a letter which led to my inserting a "Note" in the *Proceedings of the Royal Society*, Vol. 42 (1887), p. 193, containing some very necessary corrections and emendations of the Memoir. But as that Memoir has now for the second time been called to the attention of the readers of *The Monist*, Mr. F. C. Russell having referred to it with appreciation in the issue of April, 1894, I have become solicitous to maintain its reputation here at as high a pitch as possible, and am anxious, therefore, that no undeserved criticism should pass unnoticed. Mr. Peirce's article fortunately affords me abundant evidence wherein it is that he has mistaken my views, and with the permission of the Editor I propose to indicate the nature of his misconception. In doing this I may be pardoned if I seize the opportunity to state concisely and without reference to details,

exactly what the fundamental principles set forth in the Memoir are. Unless I did so, what I have to say would be scarcely intelligible.

It must be obvious to the most casual observer that the subject-matter of thought consists of much which may be dismissed from consideration without affecting those properties which it is the object of the logician or mathematician to investigate. The determination in any case of how much may be thus dismissed, of what the irreducible minimum which must be retained consists, and of the causes to which the properties of this essential residue are due, is, however, by no means simple. To effect such determination, is the object of the Memoir. It points out, in the first place, that the subject-matter of exact thought is conceived of and dealt with by the mind in the processes of reasoning as consisting of a number of separate things, as being a plurality of "units." These "units" are of every conceivable description. They may be "individuals or abstract ideas,"—to quote the words of Mr. Peirce,—or, to quote my own (Memoir, par. 4), may be "material objects, intervals or periods of time, processes of thought, points, lines, statements, relationships, arrangements, algebraical expressions, operations, operators," etc., etc. The task of specifying the exact objects or ideas which are thus conceived of and dealt with by the mind in any investigation, may in some cases be one of extreme difficulty, and mistakes are likely to occur unless the operation be conducted with great care. Thus, while no difficulty may be experienced in enumerating this or that object or idea as units which are under consideration, there may be a failure to appreciate that their "relations" are also in certain cases being conceived of and dealt with as units, and should be included in the enumeration; that the system of units before us is consequently a more extensive one than is supposed, and that unless the whole field of view is brought into focus, an erroneous impression may be created.

But, while it is important that we should not overlook any of the "units" which are really before us, it is equally important to notice that, for the purpose of defining or investigating a particular subject-matter, it is frequently useful to introduce into our field of view certain conceptions which, though valuable auxiliaries in such definition and investigation, and on occasion themselves the subject of our study, yet form no essential part of the particular subject-matter for the time being under consideration. The "relationships" existing between the objects which compose that subject-matter, the "operations" by which one individual or plurality of those objects may be conceived of as derived from another individual or plurality, and "statements" with reference to such relationships or operations are instances of "auxiliary units" which may be thus introduced. Here it may be necessary to bear in mind that such units are merely auxiliary, that they are used merely as a temporary scaffolding, which, however useful during the course of our work, may obscure the true proportions of the structure which it environs.

But probably the greatest caution is needed with regard to a somewhat subtle danger, viz., the regarding of a number of separate things or conceptions, even in-

finite in number, as if they were not many, not a plurality, but one thing or one conception only. We have, for example, a number of objects before us, and we have certain relations between pluralities of those objects also before us, and we appreciate the fact that we are dealing with these relations as units. Where the relation between the individuals of one plurality is different from that between the individuals of another, we also appreciate the fact that the former relation regarded as a unit must differ from the latter relation when so considered, and that consequently we have *two* relations before us, and not *one*. But where the relation between the units of one plurality is, in common parlance, "the same as" that between the units of another, where the two relations are said to be "identical," there are certainly many persons who would come to the conclusion that here we have but *one* relation before us, not *two*. The conclusion would, however, be a wrong one, the use of the words "the same" and "identical," though by no means uncommon, and in general not likely to lead to confusion, being here erroneous. The two relations are no doubt "undistinguishably alike," so that "one single description will apply equally to either of them" (Whately's Logic, first edition, p. 298 Appendix on Ambiguous Terms), but this is not "identity," this is not being "the same," there are *two* relations before us, and not *one*, and the failure to appreciate the fact would be to overlook a matter of fundamental importance.[1]

To follow this up, let me add that, in the remarks which ensue, when I say that two or more objects or conceptions differ from each other, I do not mean simply that they are a plurality and not one object or conception only, but that they are unlike in some respect, that something can be said of one that is not true of the other or others. On the other hand, when I say that certain objects or conceptions (in the plural) differ in no respect whatever, I do not mean that the use of the plural is erroneous and we have really only one object or conception in view, but I mean that they compose a plurality of objects or conceptions each of which is undistinguishably like each of the others, so that a description of one is equally applicable to each of those others.

The subject-matter of exact thought consists then of a mass of "units." These are not, however, conceived of by the mind as jumbled together in a mere confused heap, but exhibit a certain orderly arrangement which I term "mathematical form." What exactly is this "form," and to what is it due?

In answering this question let me ask my readers to take a somewhat general view of the subject-matter of thought.[2] From whatever point of view we regard this, the most prominent feature is probably the combination of variety and uni-

[1] "Great confusion of ideas is often produced, and many fallacies engendered in otherwise enlightened minds by not being sufficiently alive to the fact (in itself not always to be avoided), that they use the same name to express ideas so different as those of identity and undistinguishable resemblance." J. S. Mill, *Logic*, second edition, Vol. I., p. 93.

[2] The two following paragraphs are taken almost *verbatim* from the writer's Presidential Address to the London Mathematical Society on "Mathematics" of November 8th, 1894. See *Proc. Lond. Math. Soc.*, Vol. XXVI., p. 3.

formity which it exhibits. We picture to ourselves things of every imaginable description, differing in every possible way; but the representation includes objects here few in number, there many, which do not differ from each other in any respect whatever. A still greater variety is displayed by the pluralities of the things pictured, the differences between which depend not only upon the number and peculiarities of the individual objects of which each consists, but also on those additional characteristics of unlimited diversity, which accompany every plurality, and may be concisely referred to as "relations."[1] Here again, though difference is present, its absence is equally marked; and pluralities, however complex, are rarely unique but are accompanied by other pluralities, some by one, some by more, to which they bear an undistinguishable resemblance.

Now putting aside the contemplation of the special peculiarities and characteristics of the individuals and relations which come under our observation in such infinite variety, let us confine our attention to the study of the results which flow from the mere fact that this and that individual, or this and that plurality, differ while this and that do not. We shall not, as might at first sight be supposed, thereby put away everything which gives life and interest to the subject-matter of our thought and leave nothing but a mere heap of dry bones. *Form* remains. The like and unlike individuals and pluralities which are contained in any greater plurality must be distributed in some way through the whole body of individuals composing that greater plurality, and the way in which this distribution is effected gives to the latter a characteristic "form," which may or may not be different in two pluralities of the same number of individuals.

It is this "form" which I believe to constitute all that is essential in the subject-matter of thought so far as the processes of reasoning are concerned. When the "form" is determined, those "properties" and "relations" of the subject-matter which are the study of the mathematician and logician are also determined. The rest is mere dress. It follows, of course, that two subject-matters which are of like "form," however widely they may differ in other respects, will for the exact thinker have precisely similar properties and admit of precisely similar treatment.[2]

So much for the general theory. Now let us turn to the special matter upon which Mr. Peirce has misapprehended me. For the definition of the "form" of any system of units it is necessary only to indicate which of those units, and which of the pluralities of those units, differ from each other and which do not. In order to do this it will not in general be necessary to make the indication for each separate unit and plurality. The distribution of the various differing and non-differing

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[1] Differences may exist between two pluralities though none exists between the individuals which compose them. Thus geometrical points differ in no respect from each other, but a collinear triad of such points compose a plurality which differs from the plurality composed of a triad of non-collinear points.

[2] See "The Subject-Matter of Exact Thought" by the writer in *Nature*, Vol. 43 (1890), p. 156, where the geometrical theory of points and the logical theory of statements are considered and compared in the light of the principles here set forth.

units and pluralities of any system is regulated by definite laws, so that a knowledge of the mode of distribution of some only of these components may determine that of the rest, and consequently the form of the system. There are in general several ways in which the form of a given system may be thus determined, and accordingly various different definitions of the same system may be adopted. There are certain systems the "forms" of which are fully defined when we know (1) which of their component units differ and which do not, and (2) that certain specified pairs of those units differ from the rest. The pairs may be of many different sorts, and so may the larger pluralities, but the existence of all the differences involved is fully indicated by the presence and absence of the differences between the units, and by the dichotomy of the pairs. As has already been stated, the definition of the "form" of a subject-matter may be facilitated by the introduction into our field of view of "auxiliary units." Now it is demonstrated in the Memoir that, by the introduction of a proper system of auxiliary units, an enlarged system is obtained of the special description just alluded to. The "form" of this enlarged system being determined, that of the smaller one obtained by omitting the auxiliary units is also known, and consequently is defined by the limited specifications I have mentioned. This result is a very important one in reference to the graphical representation of the "form" of any subject-matter of exact thought, for it enables us to effect such representation by means of a diagram consisting only of spots and of lines connecting certain of these spots, one to one. The spots represent the units, unlike spots representing units which differ, like spots those which do not. The various units of the system under consideration, and also the necessary auxiliary units, being duly represented, each by its representative spot, we have then merely to effect a proper division of the pairs of these spots into two sets. This may be done by connecting the two spots of each pair of the one set by a line, no lines being drawn in the case of the pairs of the other set. It matters not which of the two sets of pairs consists of the joined pairs, and which of the unjoined pairs for the lines are not employed to represent anything in the nature of a connexion between the units represented by the spots which are connected by those lines. All that is needed is that all the pairs of one set should be joined pairs, and all of the other unjoined, and that the pairs should thus be made to differ from each other.

Any subject-matter of exact thought admits then, I say, of representation by a diagram consisting of spots, and of lines connecting them in the manner indicated. Such diagrams are, however, sometimes used in an entirely different way from that in which they are used in the Memoir. The chemical diagrams showing the constitution of compounds, the "graphs" of Clifford and Sylvester, and those of Mr. Peirce in his article are instances. In these graphs the lines or bonds represent a "connexion," a "copula," a "mode of junction" between the things represented by the spots. It is quite comprehensible therefore that Mr. Peirce having such use of these bonds in mind, should have supposed that "in Mr. Kempe's method the spots represent the objects, whether individuals or abstract ideas, while the bonds

represent the relations," and that consequently "Mr. Kempe seems to consider relationship to be nothing but a complex of bare connexions of pairs of objects." It will, however, I hope, be clear from the foregoing explanation, and a reference to the Memoir itself, that I do not use, and have not there used, these lines or bonds as representing any relationship in the nature of a "connexion," but simply to distinguish certain pairs of things from others. And it will, I trust, be equally clear that because I believe that the "form" of any subject-matter may be defined by statements as to the existence and non-existence of differences between "units," and as to the existence of differences between pairs of those units, it does not follow that I believe that the complex relationships between pluralities of units which result from the possession of that form, are nothing but "complexes of bare connexions of pairs of objects."

A. B. KEMPE.

LONDON.

BOOK REVIEWS.

Lehrbuch der Psychologie. Von *Friedrich Jodl*, o. ö. Professor der Philosophie an der Universität zu Wien. Stuttgart: J. Cotta. 1896. Pages, 767. Price, M. 12.

Prof. Friedrich Jodl has condensed and presented in a systematised form an enormous number of facts in the present work on psychology, which is written as a text-book for students. Professor Jodl, more than any other German psychologist, is influenced by the English school, which is commonly called the association psychology. But he has grown beyond the narrowness which marks the English associationists. He has also incorporated in his studies the results of experimental psychology, without, however, over-estimating its importance. Not the least valuable feature of the book consists in the references to the literature of the subject which are added to each chapter.

Professor Jodl defines psychology as "the science of the forms and laws of the "normal processes of the phenomena of consciousness which in the animal organism of man stand in relation to the surrounding media, the totality of which is "called psychic functions" (p. 5). In a note he adds to the word *Bewusstseinserscheinungen*, that no language possesses an adequate word covering this term, claiming that Huxley's proposition of introducing "psychosis" had found little approbation; that "idea" had too many other meanings, and that "mind" came nearest to it while the French *esprit* is too general. We would suggest that *Bewusstseinserscheinungen* is exactly translated by "phenomena of consciousness," which, however, is quite different from "phenomena of mind," for some phenomena of mind may take place without being accompanied by consciousness. The phenomena of mind (or, mental phenomena) are the intellectual functions of man's soul, viz., arguing, and reasoning. Pain is not a mental phenomenon but a phenomenon of consciousness, while an unconscious syllogism is a mental act. At the same time we venture to say that the term "psychosis" has become quite common in English, and it is generally understood in the sense that Huxley used it.

Modern psychology practically begins with Hume who was the first to doubt the traditional soul conception that conceived of the soul as a thing-in-itself which

was in possession of its qualities and performed the functions of thinking and feeling. Hume said: "Whenever I contemplate what is inmost in what I call my own self, I always come in contact with such or such special perception, as of cold, heat, light or shadow, love or hate, pleasure or pain. I never come unawares upon my mind existing in a state void of perceptions. I never observe ought save perception." Kant followed Hume in his critical attitude and declared that the ego-conception was one of the fallacies of pure reason. Modern investigators, among them Herbart, were obliged to follow Hume and Kant, and there is at present no scientific psychologist who does not stand upon the same ground. There are a few who still try to rescue the old psychology by attacking the new psychology and branding it as a psychology without a soul, but they are no longer in the lead and must concede that their position is purely hypothetical. A great number of psychologists tried to avoid the problem and leave the question in an unsettled state, assuming the attitude of investigators and waiting for further evidence.

Jodl is not among those who withhold their own opinions, but pronounces his views without any equivocation as follows: "The sum-total of all the phenomena "of consciousness given in inner perception are commonly comprehended in the "designation 'soul,' as if soul were a substantive, and the substantial bearer of the "processes of consciousness to which they are to be referred. This is quite unob-"jectionable so long as the symbolical character of the expression is heeded, so "long as we understand the name soul to be an abbreviated term for the totality of "the data of consciousness. Every attempt to change the logical and grammatical "meaning of the word soul into an ontological one, and to conceive of the totality "of the psychic processes as a real subject which is supposed to be a substance "independent of the physical organism, distinct and separable from it, involves us "in a tangle of difficulties and must be most decidedly rejected by science. The "soul does not have states or faculties, as thinking, conceiving, enjoying oneself,' "hating, etc., but all these states in their totality are the soul. It is the same with' "the physiological processes which in their totality constitute what we call life, for "life neither is a separate power or substance by the side of the vital processes. In "the sense of the old soul-substance theory, the scientific psychology of to-day is "indeed a psychology without a soul, for the true object of science is the living or-"ganism, part of whose functions are the phenomena of consciousness. But for "that reason the common objection to the idea of a power which would not be the "power of a being and of an activity which would hover in the air without a sub-"stratum as unclear and contradictory, has no sense. Unclear and contradictory "is only the assumption of a soul-substance that would be independent of the living "organism" (pp. 31–32).

Professor Jodl is quite unequivocal in his statements that consciousness and life are two phases of the same process, and he adopts the so-called dual-aspect theory of a psychical and physiological parallelism, first pronounced by Clifford. He says that even the highest psychical phenomena cannot be without their physio-

logical accompaniments, and insists again and again on the close connexion between consciousness and organised life. Jodl does not, however, propose to materialise in this way the soul of man, but means to spiritualise the mechanical phenomena, finding in chemotropism and similar processes of the vegetable world, indications of psychic phenomena which form the transition from the mineral world to animal life.

The most salient feature of consciousness is, as Jodl rightly remarks, its organisation. Consciousness is never punctual, it is never an isolated feeling but always a complex of feelings, which is the necessary correlate to the physiological fact that every animal organism is a complex system of nerve-fibres and centres. When we speak of consciousness we have always to deal with a plurality of perceptions in their mutual relations (p. 95). And wherever consciousness rises into existence an organised being feels itself as a separate entity in contradistinction to the surrounding world, thus creating a condition which makes it possible to speak of inner states as opposed to external reality. This is the reason why every psychic phenomenon refers to the whole of the psychic organism, to the ego, and every elimination of the ego in this sense from the realm of psychology proves futile. For it is impossible to describe psychic states in expressions which refer merely to objects. The term spiritual or subjective always implies a relation to the ego in the sense of the psychic totality (p. 91). Thus a psychic condition without the ego is impossible and can never become a conscious state. Here of course Professor Jodl distinguishes the elementary ego such as is shared also in a vague sense by animals from the higher organised ego-idea of man.

On this basis Professor Jodl proceeds to a special treatment of psychology which embraces the second and more voluminous part of his work, and distinguishes three activities which, however, are not distinct faculties but three phases of one and the same process. He calls the condition that originates through external impressions, sensation (*Empfindung*), the commotion which internally originates from sensations, emotion (*Gefühl*), and the reaction resulting in muscular movements, volition (*Wille* or *Strebung*). Thus the entire activity of the soul is the product of two qualities, its receptivity and its spontaneity. The soul receives impressions of the outer world and reacts against them spontaneously, the intermediate condition of which is a state of psychic tension, constituting the internal life of pleasure and pain, sentiment, passion, etc. Sensation arises in response to a stimulus. Emotion or sentiment does not possess presentative value but is qualified as pleasant or unpleasant; a volition expresses the adjustment of an organism to its surroundings.

The second and special part of Professor Jodl's psychology again contains two divisions: first, he treats in Chapters IV.–VII. of the primary stages of soul-life as they appear in sensations, sentiments, and in volitions; while Chapters VIII.–XII. are devoted to a discussion of the secondary and tertiary soul processes. In the former division Professor Jodl treats the problems of psycho-physics and the activities of the various sense-organs. He discusses illusion and hallucination (IV.,

16), the qualities of sensation, intensity of sensation, etc., etc., Fechner's formula and the difference of Weber's law from Fechner's propositions, the applicability of Weber's laws and their limits (66). The first division of Chapter V. treats of the sensations of vitality, the summation of irritations, cœnæsthesis, etc. The second installment discusses the sensations of motion, entering upon and combating the idea of a sensation of innervation, etc. The third division is devoted to the sensations of the skin and its powers of localisation, and to general sensibility. The fourth division is devoted to taste and smell; the fifth to hearing.

Here we might incidentally mention that Helmholtz's theory of *Klangfarbe* (mentioned in § 112 of Jodl's book) was first pronounced by Grassmann, and it is, to say the least, not improbable that Helmholtz knew of Grassmann's investigations but forgot to mention them when publishing the results of his own.

The sixth division of Chapter V. is devoted to seeing. Here the important problems of optic illusions of binocular vision, corporeality of the pictures of the eye, the contrast of subject and object in the act of seeing, etc., etc., are discussed with great discrimination.

Chapter VI. is devoted to the primary sensations, pleasure, pain, and perception of contrast in feelings of more or less. Professor Jodl regards both pleasure and pain as positive phenomena showing merely quantitative differences. Chapter VII. discusses the meaning and nature of volitions, as well as the conditions of attention, all subjects of importance which we could not touch upon without becoming lengthy.

The secondary and tertiary phenomena of soul-life are the result of reproduction, the nature of which Professor Jodl explains on pages 448 et seq. as the basis of all higher life.

The phenomena of memory are treated along the lines of Professor Hering's investigations. Memory is not a special faculty of consciousness, but it is a general condition of organised substance. The main deficiency in this part of Professor Jodl's book is his omission of discussing the origin of re-representative ideas or concepts. Here he follows too closely the lines of association psychology, and overlooks the importance which is produced by the fusion of memory-images of the same kind into composite pictures.

Chapter IX. is devoted to the three fundamental notions of time, space, and objective reality, as produced by the contrast of the ego and the non-ego. Chapter X. discusses the origin of speech and of thought which, according to Professor Jodl, are not identical. Here psychology comes in contact with grammar and logic, to which two special divisions are devoted (pp. 594 to 613 and 613 to 614). Chapter XI. discusses the secondary and tertiary sentiments, among them the sense of humor, wit, the comical, sense of honor, shame, sympathy, vanity, love, love of children, envy, etc., etc. The conclusion of Chapter XI. is a transition to the last chapter of the book, pointing out the superindividual sentiments and the contrast of heteronomous and autonomous morality. The problems discussed in the last chapter

on the secondary and tertiary volitions are not the least interesting of the whole book, discussing such problems as freedom of will and character-formation.

In sketching the contents of the special part of Professor Jodl's book, we regret only that we cannot enter into a further analysis of his valuable work, but if we attempted to do so we should have to write a book instead of reviewing one. That Professor Jodl's book is a most valuable contribution to modern psychology there can be no doubt, and we do not exaggerate when saying that no psychological library can be complete without it. P. C.

DIE PRINCIPIEN DER WÄRMELEHRE. Historisch-kritisch entwickelt von *Dr. Ernst Mach*, Professor an der Universität Wien. Mit 103 Figuren und 6 Porträts Leipzig: Johann Ambrosius Barth. 1896. Pages, 472. Price, M. 10.

A marked feature of recent positive research has been its alliance with philosophical criticism. The appearance of this new cast of thought was cotemporary with the renaissance of philosophical interest, which in the years succeeding the magic sway that German metaphysics held over men's minds, steadily waned before the light that the successful achievements of science spread over the intellectual world. Men had sought to scale like Prometheus of old by one fell metaphysical bound the celestial heights and to wrest by violence the secret of the universe from the hands of its heavenly keeper, only to fall back empty-handed and lamed, and to find the treasures they were seeking poured with a lavish hand from another source into the laps of their fellow creatures. Yet they had not cut their fantastic tricks before high heaven totally in vain, nor risked their glassy essence wholly to no purpose. Their feats had at least a calisthenic import. And when with the mighty onward progress of science, its concentrating of its lines of research, its probing of the last foundation-stones of knowledge, perplexities arose in the minds of inquirers at the unwonted problems confronting them and misgivings as to the right estimate of their achievements, it was found that in the despised Promethean feats of their predecessors, empty as these were in themselves and for the purposes to which they had been put, much of the method and attitude was contained that was to stand them in absolute stead in their further quests. From this dates a new era in mental inquiry.

The blending of science with philosophy and of philosophy with science now characterises the work of the best and foremost inquirers of both departments. Not that the two branches were always absolutely separated: nor that they were not in their origin (and at times in their development) identical; nor that even now they do not pursue merely different aspects of the same aim; but that, having been clearly and definitively differentiated, each is now accorded its just function and due. And wonderful fruits have grown from their union, which have redounded to the untold benefit of both. How enlightening and satisfactory philosophy is becoming, even in its mediocre representatives; how critical the verdicts of science, even in its lesser votaries! We could cite many eminent names of recent in-

quiry, both living and dead, in corroboration of our assertion; but we shall content ourselves with the instance at hand,—the name of Professor Mach, who stands in the front rank of those, who, having distinguished themselves in practical positive research, are now lending their thrice-proved powers to the elucidation of the grave and perplexing problems at its base. It is rarely given to a man to compass such signal achievements in so many departments. A professional physicist and skilful experimentalist, Professor Mach has enriched all the departments of his science, mechanics, acoustics, optics, heat, electricity, by ingenious experiments, methods, practical machines and contrivances for instruction, and notably by his critical and mathematical interpretations. His acoustic and optical experiments, and his photography of flying bullets are most popularly known here. By the side of all this, he has rendered to psychology, both theoretical and experimental, contributions which, it is safe to say, in profundity and import are more lasting and comprehensive than those upon which the fame of many eminent standard-bearers of this department rests. The same is true of philosophy and of the criticism of science. His early essay (1872) on the *Erhaltung der Arbeit* is a mine of suggestiveness, long neglected by the philosophical public, but containing in one form or other many utterances which have since become watchwords of scientific criticism The germs of his philosophical thought here presented have, along with a wealth of other new matter, been developed in his subsequent published lectures and essays, in his *Mechanics*, and in the book on *Heat* now under consideration. And all this with an exhaustless plentitude of insight into the various related sciences has been presented in a few terse volumes.

The present work on *Heat* pursues the same aim as the author's *Mechanics*. It seeks to clear up, by the light of a practical, rational theory of knowledge, the foundations of the science of thermotics and to eliminate therefrom all the superfluous notions, all the unwarranted metaphysical conceptions that have crept into it in its development. The book has a threefold character—historical, scientifico-critical, and philosophical. There are chapters on the history of thermometry, on that of the conduction and radiation of heat, on the history of calorimetry, thermodynamics, energy, etc., critical chapters on the upshot of all these subjects and on physics generally, and finally philosophical sections, discussing such subjects as Names and Numbers, Continua, The Development of Science, The Sense for the Marvellous, Language, etc. Through all there runs a humanistic trend. We shall consider the work briefly under the three aspects noted—the scientifico-critical, the philosophical, and the humanistic—giving illustrative examples of each. Some of the philosophical matter we intend translating for *The Open Court*.

The instance of scientific criticism most within the reach of philosophical readers is the author's considerations touching the subject of thermometry. The development of thermometry, beginning as did most other things in modern physics with Galileo, embraces a period of two hundred and twenty-five years (1592–1817). It began with the recognition of changes of volume as a measure of degrees of heat,

passed from air as the standard thermoscopic substance through the liquids to the solids, and after various vicissitudes, by the researches of Boyle, Mariotte, and Gay-Lussac, reverted again to air or rather to the gases, finding its culmination in the law that all thermometric substances except gases exhibit distinct individual behaviours, and in the consequent quest for a *rational* thermometric scale.

In the criterion of change of volume as a measure of thermal intensity, we have, contends our author, first a convention and second an arbitrary choice. The starting-point is the sensation of heat. That sensation of heat and change of volume should run parallel is not determined by our choice. They are two distinct elements; we know their connexion only from observation; and experience alone can tell us how far their parallelism extends. We register the voluminal changes, attach to these numbers, make the latter the substitute of thermal intensity, and pursue with respect to the *arithmetical scale* speculations which we re-apply to the real thermal states themselves, thus arriving at the idea of absolute temperature, absolute zero of temperature, etc. But absolute temperature, any more than absolute rest or motion or time, does not exist. In seeking it we are seeking a Platonic prototypal idea, seeking in reality a notion which we ourselves have hypostatised, applying results which we have reached in the development of an ordinal formal criterion to a scale of real facts for the upshot of which we have under all conditions to await the verdict of experience.

Amontons was the first to hit upon the idea of a "coldest point" or absolute zero of temperature. His idea in a modified form persists in physics to-day. It is based upon the conception that the tension of a gas is produced by its heat. For every degree increase Celsius from 0° onward the volume or expansive force of a gas increases by $\frac{1}{273}$, and *vice versa* for the decrease. The number $\frac{1}{273}$ is the coefficient of expansion of the gas. Taking $\frac{1}{273}$ away 273 times we arrive at zero volume or zero expansive force. The point —273° C. is called the absolute zero of temperature.

But if we took the coefficient of expansion of mercury, and pursued the same train of reasoning, we should reach —5000° C. as the absolute zero of temperature. And again, other methods, *a priori* equally rational, of measuring temperature, have been proposed. If we took Dalton's, for instance, using water as the thermoscopic substance and quantities of heat as the criterion, we should find —160° C., using mercury, —2021° C. as the absolute zero; mixing water and sulphuric acid we should get something between —830° and —1720° C.; and many other combinations, giving other results, are conceivable.

We have thus a multitude of "absolute zeros," all of which rest upon different hypotheses, which being substituted for the facts all give a different result. What we are doing is not studying the facts but the representations of the facts. That there is a limit in either direction to the scale of representation does not bring with it that there is a limit to the facts. The tone-sensations may be represented by rates of vibration, which being numbers have a *lower* but *no upper* limit; they

may also be represented by the logarithms of these numbers, which are unlimited in either direction (running from $-\infty$ to $+\infty$). The tone-sensations themselves, however, are limited in *both* directions. The fact is that when the tensions of a gas become zero, the indexes of the registered temperature vanish; the gas is no longer serviceable as a thermoscope; we must seek something else. In fine, experience alone can determine whether the thermal states are limited in either direction; like potential, velocity, etc., the notion of temperature is a notion of *level*, differing from the rest in that some of its levels are determinative.

Such is a skeletal abstract of Mach's criticism of the notion of temperature. We should like similarly to reproduce the discussions relating to conduction, radiation, thermodynamics, the principle of Carnot, and to the sources of the principle of the conservation of energy, but the reader may gain something of an idea of the last two points from the already published *Popular Scientific Lectures*, to which we refer him.[1]

The section on calorimetry is notable, and we catch here considerable of the author's philosophy of science, which upholds the ideal of a descriptive, phænomenological formulation of the facts of the world as distinguished from a symbolical or allegorical formulation (mechanistic, substantive, etc.). Thus Black conceives the notions of "quantity of heat," "specific heat," and "latent heat," to explain the phenomena of mixed heated masses, of melting, vaporisation, etc. His procedure was sure, brilliant, and what is more marked a distinct conquest in science. Representing the masses by m, m', the changes of temperature by θ, θ', the specific heats by s, s', and latent heat by λ, Black discovered, or so pursued his quest, that the following equations were fulfilled:

$$m\theta + m'\theta' = 0$$
$$m\theta + s'm'\theta' = 0$$
$$sm\theta + \lambda m' = 0$$

In this lies his real achievement. When he went farther and pictured the above abstract quantitative expressions of the facts under the guise of substance, etc., he did more than was necessary; his symbolisation helped him but impeded his successors.

The goal of all physical research is the fulfiling of such equations, the fixing of the quantitative connexions of the things of the world by abstract mathematical signs, entirely stripped of superfluous allegorical adjuncts, and embracing in one scheme all possible cases. Such are the dynamical equations of Lagrange, and the theory of Fourier on the conduction of heat, which is here characterised as a model of physical inquiry.

We will now look at an example of the humanistic side of the work, its glimpses into the mental workshops of the inquirers. The author is speaking of Black's views of scientific research. After quoting a few passages in point, he says: "There

[1] Pp. 137–185.

"is an unmistakable echo of Newton's genius in these passages. Chemistry was "really not Black's profession. He was a professor of medicine and a busy prac- "titioner. 'He gave such unremitting attention to his patients,' says his biogra- "pher, 'that it scarcely seems possible he could have found the least time for his "other occupations.' We have here, it would seem, a partial explanation of Black's "attitude as an inquirer. There is a reason for the success which physicians and "engineers not infrequently encounter in scientific inquiry; for in their case the "scientific training which the best of them carry into their professions, is in con- "stant contact with life and rarely impeded by the narrow views of the schools. "Black is one of those rare men who win our love in all we know of them, and in "every page of their writings. The inornate, honest, pretensionless simplicity "with which he sets forth his thoughts, is reached by few. Whatever he under- "takes he seems to compass without effort. We might say of him, to use an expres- "sion often applied to the poets: 'He is a thinker by the grace of God.'"

We have similar utterances on Carnot and on the other founders of thermodynamics. Particularly good is the comparison of Joule and Mayer. In speaking of the beautiful experiments of the former, the following sentence, which will please Englishmen, occurs: "The situation with regard to Joule is the same as with re- "gard to Mayer, excepting a characteristic English trait. Sound methods of phys- "ical inquiry seem almost inborn in Englishmen, or are certainly inbred. English "inquirers are never clouded by metaphysical fogs, at least never make them the "cardinal issue. In Joule's case, every idea is put to the test of experiment, every "experiment reacts upon his ideas. The unceasing mutual adaptation of theory "and experience may be followed with great clearness in Joule's work."

We should like to quote more such passages, for the author's pages abound in them. And of the work as a whole we hope to have given a vivid, though fleeting, impression, as a masterpiece of genial inquiry which can be read by philosopher and scientist alike. No one interested in these questions should leave his mind uninfluenced by the rich, beneficent stimulus which it offers. T. J. McC.

TRAITÉ ELÉMENTAIRE DE MÉCANIQUE CHIMIQUE FONDÉE SUR LA THERMODYNAMIQUE. Par *P. Duhem*, Professeur de Physique Théorique à la Faculté des Sciences de Bordeaux. Tome I. Introduction. Principes fondamentaux de la thermodynamique. Faux équilibres et explosions. Paris: Librairie Scientifique A. Hermann, Rue de la Sorbonne, 8. 1897. Price, 10 francs.

The present book scarcely falls within the line of the work of *The Monist*, but as the principles which it employs, the theories which it develops, are now in the foreground of scientific criticism, and as the position of its author as one of the first of living theoretical physicists makes it a standard authority on its subject, we cannot pass it by without some slight reference and without the full measure of commendation. The work will embrace two volumes. The first, which is now just out, expounds the preliminary analytical and mechanical notions employed in the

study of chemical thermodynamics, develops the general physical principles of the same science, notably in their bearing upon chemistry, and finally, in its consideration of false equilibria and of explosions, enters into the detailed application of the foregoing theoretical parts. The work is predominantly mathematical, but for its subject is simple and not wanting in æsthetic qualities, to which the outward labors of the publishers have added a welcome and agreeable typographical emphasis. Duhem's treatise aims at marshaling in compact and systematic form all the main results of mathematical physical chemistry, which hitherto have largely lain scattered and isolated in scientific reports, and so forms an indispensable work for the scientific library. T.

HISTOIRE DE LA PHILOSOPHIE EUROPÉENNE. Par *Alfred Weber*. Sixième édition. Paris: Fischbacher. 1897. Pages, 500.

HISTORY OF PHILOSOPHY. By *Alfred Weber*, Professor in the University of Strassburg. Authorised Translation by Frank Thilly, A. M., Ph. D. From the Fifth French Edition. New York: Charles Scribner's Sons. 1896. Pages, 630.

LEIBNIZENS STREIT GEGEN LOCKE IN ANSEHUNG DER ANGEBORENEN IDEEN. Von *Frank Thilly*. Heidelberg: Universitäts-Buchdruckerei von J. Hörning. 1891.

France is not as rich in histories of philosophy as Germany, and it is remarkable that the author of this most scholarly and comprehensive work on the History of Philosophy is an Alsatian who had the advantage of passing through French as well as German universities, and has combined in a happy alliance the advantages of both.

Alfred Weber is a descendant of one of the old Alsatian families which were mentioned centuries ago in the chronicles of the free city of Strassburg. He was Professor at the University of Strassburg while Alsace was still in the possession of France. When the Germans seized the country he remained in his position and is at present still there as head of the Philosophical Department.

During his younger years, Weber was powerfully attracted by the religious philosophy of Schelling who was one of the apostles of a monistic conception of the world on the basis of natural science,—not in a narrow sense of the so-called physical sciences which would exclude a due consideration of the more significant branches of anthropology and psychology, but in the broadest sense of the word nature. Weber was also influenced by Hegel, but he never allowed himself to become a blind follower of the philosophy of the Absolute. After a study of Schopenhauer's works, Weber wrote a little pamplet in which he embodies his criticism of the great pessimist by emphasising that the will to live with the growth of civilisation changes into a will to realise the good. Schopenhauer has utterly neglected in his system of thought this will to realise the good, and yet how much more power-

ful does the latter grow in the course of evolution than the former, for we even find people who do not believe in an immortality of the soul, willingly sacrificing their lives for the sake of their ideals.

In accordance with this latest development of Weber's views, the Alsatian philosopher views religion as a will to realise eternal life. He finds at the very beginning of the religious evolution of mankind that the religious sentiment originates on account of death. Man witnesses the death of his dear ones, and he comprehends that death is the common fate of all, including himself. Religion is the natural reaction which the thought of death produces in man, and this is and remains its characteristic feature from the beginning to the present day. It shows itself in the superstitions of the savage as well as in the confessions of faith of all the various religions that now prevail upon earth. Everywhere the immortality idea is uppermost, and without it there would be no religion.

These two pamphlets on the will to realise the good, and on religion as the will to realise eternal life, are written in German, the mother-tongue of the Alsatians, while all the other books of Professor Weber are composed in French, the language of his early education. In spite of the small size of his German pamphlets, they embody the most salient and important thoughts that characterise Professor Weber's philosophy.

As to Professor Weber's History of European Philosophy, we can only recommend it to the student of philosophy, in justification of which we simply point to the fact that it has reached its sixth edition. The book has been well received in Germany as well as in France, and we dare say it is one of the standard books which in many respects compares favorably with Erdmann and Ueberweg, and I would not hesitate to give it preference over more modern German works in the same field. The book is not overloaded with professorial paraphernalia; *non olet cathedram*. The absence of footnotes and other learned apparatus so conspicuous in German works will be a pleasant feature to many readers. References to the sources are not omitted, but they are reduced to the utmost, and partly woven into the text, which renders the book a remarkable combination of French elegance and German thoroughness. The style is limpid and presents scarcely any difficulties even to foreigners who possess only the ordinary reading knowledge of French. The résumés of the various philosophical systems are complete and yet brief. Nothing of importance is omitted, and nothing is treated at undue length. Modern philosophy and also its development on American soil is not included in the scheme of this book. Darwin and the contemporaneous monism, together with the French positivism and the German neo-criticism are only briefly mentioned; and in the conclusion of his work Weber merely suggests his views of the great agreements that obtain among all philosophies. They consist in the recognition of reason, the postulation of an essential unity of all things, the observation of the universality of struggle, of effort, of will, and of conscience, the affirmation of the moral ideal which is the ultimate aim of the creative efforts and the cosmic becoming. Thus,

nature is development, the infinite perfectibility of which forms at the same time its impulsive force and its highest goal.

The print of the book is clear and pleasant, and it is a pity that after the fashion of European books it contains no index, which will be missed, especially by American readers.

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Professor Weber's *History of Philosophy* has been translated into English by Frank Thilly, Professor of Philosophy in the University of Missouri, because the latter deems it "the most serviceable manual thus far published." He sums up his view of the work as follows: "It begins as simply as the history of philosophy "itself, and gradually introduces the reader to the complex problems of modern "thought, to which it devotes more than one-half of its entire space. The portions "dealing with Kant and his successors are particularly admirable. The clear and "comprehensive exposition of the Hegelian philosophy will greatly assist the stu- "dent in his endeavors to understand that much abused system. And the modern "theory of evolution, which has revolutionised the thought of our century, and "which is barely mentioned by Falckenberg and Windelband, surely deserves the "attention and criticism it here receives."

Professor Thilly's translation is in every respect admirable. It is not slavishly literal, but it shows an independent mind which considers the needs of the reader and adds several helps which greatly increase the value of the book. The translation is made from the fifth edition, but since Professor Weber has communicated to the translator the changes and additions he intended to make, it is as good as if it had been made from the sixth edition, which has in the meantime appeared. We have not been able to discover a difference of any importance. Professor Thilly has added brief references, especially to American and English publications, which are not mentioned in the original, and has also added an exhaustive index of eighteen pages, which, at least in the opinion of Americans, is indispensable to any work of over six hundred pages, and especially to a book that is used both as a textbook and for reference. It seems that any one who would desire to use the original could do it better by first referring to Professor Thilly's translation. There can be no question about that, that as a text-book for philosophical students in English and American universities Weber's book in Professor Thilly's translation is highly recommendable.

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The translator of Weber's *Histoire de la philosophie* took his doctor's degree several years ago at Heidelberg on the ground of a very creditable dissertation treating in a purely historical manner the controversy of Leibnitz *contra* Locke concerning innate ideas. It is one of the most important phases of a struggle that is still to be fought out in philosophy. There is on the one side rationalism, represented by Descartes, Spinoza, Leibnitz, Wolf, and on the other side empiricism, represented by Bacon, Locke, and Hume. The question is, Are there innate ideas

or not? Descartes says, There are; and Locke denies the existence of innate ideas; while Leibnitz in criticising Locke's position accepts but modifies the doctrine of innate ideas. Locke considers mind in its original state as a *tabula rasa*, and declares: *nihil est in intellectu quod non antea fuerit in sensu*; and "being in the intellect" is, in Locke's opinion, being conscious of an idea. Leibnitz concedes that conscious ideas are not innate. Yet if all knowledge rises from the senses, how can we have any conception of necessity. Necessity is to Leibnitz the test of innate ideas, and innate ideas are no longer to him conscious thoughts but dispositions of the mind, *Anlagen*; he accepts Locke's position: "*Nihil est in intellectu quod non antea fuerit in sensu*," but he adds, "*nisi ipse intellectus*."

Thilly discusses first the relation of Locke to Bacon, then that of Locke to Descartes, and finally Leibnitz's case against Locke. Here he leaves the question without adding any opinion of his own, showing throughout the fairness and impartial exactness that should always distinguish the historian.

The subject being of extraordinary interest we feel tempted to add a few remarks. We should say that Locke's criticism of Descartes was in one main point just: Locke was right in denying the existence of innate ideas. Yet Locke misunderstood Descartes's position. Descartes contrasts sense-perception and thoughts or ideas—a distinction which was never made by Locke. Sensations are impressions; they are not yet knowledge; they are different from ideas or pure thoughts (noumena), and cognition is possible only through thinking; and as Descartes sees no possibility for certain ideas to originate from sense-experience alone, he assumes that some ideas are innate. Locke makes no distinction between sense-impressions and thoughts. He calls both "ideas." Thus it was natural that in spite of the justice of his criticism, he did not succeed in overcoming Descartes's proposition. If the mind was a *tabula rasa*, then there was after all something innate; there was nothing written on the primitive mind, but something can be written on it. This would have been the consistent conclusion, and this was indeed in the main Leibnitz's position.

Have later philosophers left the question in this dilemma? It almost appears so, for in spite of Kant, both schools are still represented to-day. The innate ideas of Leibnitz and the *tabula rasa* of Locke are now called the ego, the monon, the self, the soul, and other mystical names.

In our opinion, there is no such a thing as a mind that is a *tabula rasa*. The problem is not, How come ideas into the mind? but, How does mind originate? Mind and ideas are not two things; they are inseparable. No mind without ideas, no ideas without a mind. In other words, mind is a systematised union of ideas; mind is a commonwealth of thoughts; and among the ideas that people our mind, there are some which do not rise from sense-impressions; these are the conceptions of the formal sciences. The question therefore is, How do the ideas of formal thought originate? An answer to this question shows that the commonwealth of ideas—the mind—possesses some constitutional forms through which sense-impressions are worked out into cognition. These forms originate from and grow with

experience. They are an expression of the same forms that condition the order of the objective universe. The presence of these forms changes sensations into ideas or thoughts, and thus makes of a sentient being a thinking mind. Sensations are presentative feelings; ideas are representative. Alone through these forms, which are formulated in mathematics, logic, etc., a mind conceives the idea of necessity which cannot be deduced out of the mere data of sense-experience. Cognition is possible only through a constant reference to these forms and formal systems. Leibnitz is therefore right that there is in every mind not only that which came into it through the senses but also the mind itself, viz., that something which represents the relations among the sense-impressions; there are the categories in which they are arranged and also the systems of pure forms which are abstracted from such arrangements. Yet the fact that these mental forms are constitutional does not render them innate or mystical. That element of experience which produces them is a universal feature of reality; it is form. The idea of necessity is nothing but the universality of the law of sameness that has become conscious. P. C.

NEW ESSAYS CONCERNING HUMAN UNDERSTANDING. By *Wilhelm Gottfried Leibnitz*. Together with an Appendix. Translated by Alfred Gideon Langley. New York and London: The Macmillan Co. Pp. 861. Price, $3.25.

The students of philosophy who go to the sources for their knowledge and are not content to rely wholly upon historical expositions, will welcome the present work containing the New Essays of Leibnitz. The translator, Mr. Alfred Gideon Langley, has performed his arduous task carefully, and supplied to the text a vast volume of bibliography and biographical notes, which, with the original matter itself, have swelled the book to 861 octavo pages. In the face of this fact it is well that the translator did not incorporate his intended "Introduction on the Philosophy of Leibnitz" in the work. The book is a translation of the entire fifth volume of Gerhardt's edition of the philosophical works of Leibnitz, including Gerhardt's brief introductory remarks of nine pages—matter which, being partly Latin, partly French, and partly German, has never before in its entirety been translated into English. The contents of the volume are too well known to philosophical students to need restatement, and we shall only say that the four books of which they consist treat: (1) of innate ideas; (2) of ideas; (3) of words; (4) of knowledge. The appendix, besides notes and introductions, contains the letter of Leibnitz to Jacob Thomasius on the history of philosophy, one or two fragments, an essay on atoms and on the origin of things, and most important of all the essays on dynamics which constitute the body of Leibnitz's share in the great controversy of the eighteenth century on the measure of force. It is important to know that these essays are contained in this volume. The indexes are unusually full and complete, and great care seems to have been exercised in all points of textual criticism. Upon the whole, we have a useful work, rendering a distinct service to the literature of philosophy. P.

SYSTEMATISCHE PHYLOGENIE DER WIRBELLOSEN THIERE (INVERTEBRATA). Von *Ernst Haeckel*. Zweiter Theil. Berlin: Georg Reimer. 1896. Pages, 720. Price, 17 M.

The readers of *The Monist* are perfectly familiar with the character of Professor Haeckel's present work, the first and third parts of which we reviewed on their original appearance (see *The Monist*, Vol. V., p. 451, and Vol. VI., p. 311), so that we have now merely to note the publication of the second part which treats of the phylogeny of the invertebrates. The entire work is now complete. It is marked by the same qualities as all of Professor Haeckel's books,—lucidity of style and breadth of view; and when we remember that the vivid hypothetical picture which the author here offers of organic ancestral history is the net result of thirty years of hard, fruitful labor in this domain, we can approximately grasp its worth and import. Professor Haeckel's indefatigable pen is never idle, and we have also to record the publication of a large quarto brochure of 177 pages on the phylogeny of the Echinoderms, with many handsome plates (*Die Amphorideen und Cystoideen* Leipsic, Engelmann). μ.

SOCIOLOGIA E FILOSOFIA DEL DIRITTO. By *Lorenzo Ratto*. Turin: Unione-Typografico-Editrice. 1894. 8mo, pages, ix+178.

STATO E LIBERTÀ: SAGGIO DI SCIENZA POLITICA. By *Lorenzo Ratto*. Savona: A. Ricci. 1890. 8mo, pp. xii+118.

These two volumes cover in part the same ground. In the preface to the first we are told that in it are summed up the results of various investigations which may be published later on. Its seven chapters are devoted to the following subjects: The relation between philosophy and science, social philosophy, the conception and limits of natural sociology, the sociological problem, the crisis of the philosophy of law, and the task of juridical sociology. The second volume considers the natural formation of the state, the state as a living organism, and liberty as the foundation of juridical and political institutions. Both volumes are valuable contributions to the modern task of clearing up the conceptions of the branches of knowledge they discuss, and the relation of these branches to other disciplines.

Especially interesting is the author's conception of sociology. In this country the drift of expert opinion on the question as to whether sociology is a philosophy or a science seems to be toward the conviction that it is a correlating and co-ordinating philosophy. Dr. Ratto, however, while granting the existence and importance of a social philosophy, called by him sometimes general sociology, maintains that there is also a place for a science of sociology. Philosophy, which he limits to the consideration of concepts and problems not peculiar to any science but common to all, he divides into three sections corresponding to the three groups of sciences—Cosmology, Biology, and Sociology. The last of these groups he divides into three sub-groups: natural sociology, moral sociology, and political sociology. Natural sociology includes a group of sociological sciences not yet carefully distinguished,

such as pure sociology, which should investigate the laws of the formation and evolution of the social organism, its physiology, psychology, etc., and "all the sciences contained in embryo in modern sociology." Moral sociology embraces the social sciences, moral and historical, and political sociology includes juridico-political sociology, which he thinks should take the place of the philosophy of law, and all the juridical and political sciences (*Sociologia e filosofia del diritto*, p. 13). We thus see that according to his view general sociology or social philosophy is a synthesis of three groups of sciences, one of which includes the science of sociology. To the conception and limitations of this science he devotes a chapter.

Inasmuch as the principal task of the science of sociology is, according to Dr. Ratto, the determination of the nature of the social organism, it is not surprising to find him denying to Comte the honor of being the founder of sociology and bestowing the same upon Espinas, who sought an answer to the question, "What Is Society?" by a careful study of animal societies. The limitation of sociology to the study of human societies is, according to our author, a relic of the old anthropocentric idea. It is only by going back to sub-human social life that we may hope to discover the origin and nature of society. From the lowest form of animal society to the most highly complex human society of to-day the line is as unbroken as it is from protoplasm to man.

It may be thought that the conception of sociology here outlined is open to the criticism that there is no distinction between sociology and biology. Dr. Ratto considers this criticism and shows that it is invalid. He admits that these sciences are closely related. Biology, however, studies the individual, while sociology studies the group. Between the group and the individual there are fundamental distinctions. To say, as Fouillée does, that every individual is a society and every society an individual, is an abuse of language (*stato e liberto*, p. 49). But even if this were true biology studies only those societies in which the units do not constitute individuals physiologically distinct or distinguishable (p. 57).

While many will not admit that the argument of Dr. Ratto in favor of a new science is convincing, all will agree that his discussion is one of the ablest that has thus far appeared. Many indeed are disposed to regard all attempts to define and limit sociology as premature. A science, like almost everything else, is a growth. If sociology is really a science we need have no fear that it will reveal itself as such as it develops from the embryonic stage. Our chief present concern should be to collect material. Until there is a residue of facts of sufficient proportions to engage our attention we cannot be sure that there is need or room for a science.

Something should be said in regard to the conception of the philosophy of law which is expressed in these volumes. A few words from the preface of the former volume will perhaps make it clear. "The principal point," says Dr. Ratto, "to "which I would call the reader's attention, is the attempt at a division of the old "philosophy of law, galvanised by the actual philosophic movement, into two new "and quite distinct sciences, one of which may still be called the philosophy of law,

"although the name is not appropriate, and which has for its object the investiga-
"tion of juridical ideals and the laws of their realisation; the other called juridical
"sociology, a name equally inappropriate but not easily improved, which has for
"its object the new studies upon the natural formation and evolution of juridical
"and political phenomena."

These volumes and others which have lately appeared in Italy illustrate a fact not well enough known in this country, and that is that Italian thought on sociological subjects is abreast of that in any other country. I. W. HOWERTH.

THE THEORY OF KNOWLEDGE. A Contribution to some Problems of Logic and Metaphysics. By *L. T. Hobhouse*, Fellow and Assistant-Tutor of Corpus Christi College, Oxford. London: Methuen & Co. 1896. Pages, xx, 627. Price, 21 shillings.

Mr. Hobhouse thinks the time has arrived for an attempt to fuse what is "true and valuable in the older English tradition" with the newer doctrines of Lotze and Hegel. We shall limit ourselves to giving our readers a general idea of the contents of the book, which we may say at once is deserving of careful study.

In his Introduction the author tells us what he understands by philosophy. This is a synthesis of the sciences—"of all that is known, and . . . of much also that is only felt or hoped." To this synthesis the theory of knowledge contributes only one element, that which concerns "the conditions of genuine knowledge and of certain broad aspects of the results or tendencies of knowledge which seem to be bound up with any just conception of its conditions." The subject is highly complex, and that the reader may have a guide to the line of thought pursued, the author begins his work by pointing out, that in regard to any statement whatever three questions may be asked—as to the grounds on which it is made, its meaning, and its truth—and that these questions deal respectively with the conditions, the contents, and the validity of our knowledge as a whole. The discussion of the subject follows these lines.

The work is divided into three parts, the first of which treats of the *Data* with which the theory of knowledge is concerned. Chapter I. deals with Apprehension, used in the sense of sensation or perception, which is the starting point of knowledge. Its content is fact, within which may be included space and time, as well as qualities and relations. Memory, and Construction, which appears first as "memory-synthesis," and is based on comparison operating by analysis or abstraction, engage attention in the next two chapters. The remainder of Part I. is devoted to a discussion of particular and general Ideas, Resemblance and Identity, and of the nature and different kinds of Judgment, which the author speaks of as the acceptance or assertion of an idea "involving a suggestion of, or reference to reality. In the chapter treating of "The Validity of Judgment" he considers the objections to categorical judgments. Here he concludes that space and time are not proved unreal by infinite divisibility or infinite extent. Part II. of Mr. Hobhouse's work deals

with the theory of Inference, under the heads of Imagination, Inference, Probable Reasoning and Induction. The chapters on Numerical Probability, Scientific Induction, The Interconnexion of General Truths, and Constructive Generalisation are of especial interest. Under the head of "Explanation" the author treats fully of the relation of cause and effect, which he describes as forming "one process or stream of existence passing before us." Classification has to do with general attributes and relations, as opposed to explanation, which is concerned with universal laws and their relations, and hence is the ideal of science.

The third part of this exhaustive work is concerned with the subjects of the Validity and Reality of Knowledge, and it deals with many important questions. Knowledge is declared to be valid as a system of judgments connected by valid methods, and the principle of validity itself is guaranteed by the system which it forms. In the chapter on External Reality the thing-in-itself receives attention, and the conclusion is arrived at that apprehension is of outer objects. The next chapter deals with Substance, and the subject is discussed under two heads, "that of the unity of various attributes in the thing, and that of the permanence of substance in the midst of qualitative changes." This leads to a consideration of the Conception of Self, which the author, distinguishing self from subject and from the ego, seems inclined to regard as the substantial whole to which consciousness belongs, although "the ultimate substance to which consciousness is referable remains doubtful." In his concluding chapters Mr. Hobhouse argues that Reality is an interconnected whole, probably organic, and he affirms that knowledge is relative only in the sense of being partial and inadequate, and that our conception of the whole grows constantly less inadequate. Careful consideration is given to the subject of variability, which is said to be "determined by the constructive necessities of the whole to which they belong." Finally, Logic is a hypothetical reconstruction of knowledge, and the function of Philosophy is declared to be the interpretation of reality by a synthesis of knowledge in which is included the "truth of feeling."

C. S. W.

DIE ENTWICKELUNG DER GEHIRNBAHNEN IN DER THIERREIHE. *L. Edinger.* "Allgemeine Medicinische Central-Zeitung," 1896, No's 79 and 80.

In this recent address before the Sixty-Eighth Assembly of German Naturalists and Physicians Professor Edinger has so concentrated our present knowledge of nerve-evolution that it would be impossible to crystallise in a short review all that is contained in his admirable and suggestive lecture. We may, however, call attention to two or three points on which Dr. Edinger lays special emphasis.

Although dealing principally with the nervous mechanism of vertebrates, he rightly claims that the operations of these complex structures cannot be understood without studying lower organisms. And to this work he strongly insists that the investigator shall bring no prejudices; that he shall apply no anthropopsychic units of measurement; that he shall not describe the wriggling of a worm nor the closing of

a clam's shell in the terminology of human psychology. This is emphasised by reference to Dr. Jacques Loeb's work on the sea-anemone, a pouch-like animal having at one end a mouth surrounded by tentacles. The animal possesses no definite nervous system. If one touches these tentacles with a piece of meat, they seize the morsel and press it into the mouth. If paper is offered, they do not take it. The tentacles seem, therefore, to exercise discrimination in the selection of food. As one observer puts it, "the actinia tastes." But Professor Loeb has shown in the clearest manner that no such interpretation is allowable. He was able by certain operations to cause the development of tentacles on parts of the body far from the mouth. These appendages could be of no possible use in the taking of food. Yet they exhibited the same selective power as those around the mouth. They took the meat and strove to push it through the body wall. They likewise rejected the paper. There was no indication that the animal understood the uselessness of the operation. The act of food-taking must, therefore, be attributed to chemical stimulation of the contractile tentacles. The animal no more tastes than does our stomach when peristaltic motions of its walls are aroused by the presence of food.

The savage declared that there must be a horse inside the locomotive. So we have put a man into every moth that seeks the light, every snail that withdraws into its shell, every worm that squirms and wriggles. It is "curious"! It "fears"! It "feels pain"!

The truth is we know almost nothing of the sensations of invertebrates. We do know that they lack wholly the apparatus which in the higher animals is associated with consciousness, and we are not justified in describing them in terms which imply the possession of mental powers or human sentiments.

Professor Edinger also cites the experiments which show that the crawling of an earthworm is a purely reflexive response to peripheral stimulation. Locomotion, although apparently adapted to the creature's welfare, is not an expression of consciousness. Dr. Edinger points out how well the experimental evidence of this fact, worked out by Friedlander and Loeb, is corroborated by the nervous structure of the earth-worm as described by G. Retzius.

The case of the worm is but one of many familiar instances illustrating how a sensory stimulus may, by proper apparatus and without conscious will, lead to an extensive series of complex co-ordinated motions. Edinger believes that this principle has wide application in the animal kingdom. In vertebrates it would explain those activities of which the spinal cord is the special centre. All the motions of the acraniate Amphioxus, the apparently purposeful reflexes of brainless frogs and the perfect swimming of brainless ducks are cases in point. That all of these are comparable with the crawling of the worm is proven not only by a comparative study of the phenomena themselves but also by the structure of the spinal cord, which, in so far at least as it is an independent centre, is but a complex variation of the principles of architecture found in the nervous system of worms. This may

be taken as the first proposition demonstrated by the methods of comparative anatomy and comparative physiology.

His second theorem is that everything brainward of the spinal cord is a later development, and that the evolution of psychic functions is in direct proportion to the evolution of the cerebral cortex and its associative fibre-tracts. By a series of examples and a comparative study of each part of the brain, he shows how nearly this proposition is capable of demonstration at the present time. Concerning the medulla, cerebellum, midbrain, etc.—in fact all parts of the encephalon except the cortex and its association apparatus—the evidence adduced shows either a constant structure throughout the vertebrate phylum, as is the case with the midbrain, or else a development not regular nor proportioned to the height of an animal in the natural scale, but rather in accordance with its habits of life. An example of the latter condition is the olfactory apparatus, which is highly developed in the fishes, but is reduced to a minimum in the advanced group of birds.

In the cortex, however, we have an apparatus in comparison with which all other parts of the nervous system have undergone only minimal changes. From small beginnings, to be sought among the Selachians, have come the great hemispheres of the human cerebrum. Most important of all, the evolution of mental power has kept pace with the development of this part of the brain. While simple motions and the primary valuation of sensory impressions are accomplished throughout the vertebrate series by substantially the same apparatus, the higher associative faculties come only through the cerebral cortex. All the best evidence of physiology, histology, and pathology, points to this conclusion.

Tracing the evolution of the cerebrum Professor Edinger points out that, for the earliest cortex, connexion with the taste apparatus alone can with certainty be made out. "As the case stands now," he remarks, "we must consider the cortex as primarily a centre which with all its associations served the sense of taste." This first function can be traced throughout the vertebrate series, although somewhat doubtfully in birds. In the course of evolution other parts became connected with the cortex, and with each addition came enlargement of the psychic powers. This fact is illustrated by the cortical connexions of the optic nerve, which have been more thoroughly investigated than any other. In the fishes the optic fibres end in the roof of the thalamus. The same is true of the young of all animals including man.

"The baby new to earth and sky,
What time his tender palm is prest
Against the circle of the breast,
Has never thought that this is I."

He sees, but does not understand. He preserves no connexion of sight impressions. At the age of two months, however, at the very time when examination of the brain shows the development of the fibres connecting the midbrain with the cortex, the child begins to acquire sight experiences. He

"Finds 'I am not what I see,
And other than the things I touch.'"

The lower vertebrates never develop these cortical tracts, and just so surely their vision remains of a primary character. A hungry snake will crawl over a mouse without noticing it, provided the "tim'rous beastie" keeps still. It will swallow a dead mouse if the latter is kept in motion. But in the birds, where the primary optic centers first acquire connexions with the cortex, we find an entire change of mental power. Many experiments and observations show that the feathered world understands what it sees and associates therewith its earlier sight impressions.

It should not be overlooked that with the evolution of the cortex proper there is found a parallel increase of associative mechanism. As Professor Edinger states it, "Nothing characterises the mammalian brain more than the development of numerous and massive association tracts along with increase of the cortex." And here again mental evolution goes hand in hand with that of anatomical structure. Sense and substance, faculty and fabric, mind and matter are parallel and inseparable.

It will therefore be seen that the great authority of Professor Edinger is thrown with those who believe that differences in mental endowment imply differences in cerebral structure. In regard to what these differences are and in regard to the localisation of psychological functions in the cortex, he acknowledges the meagerness of present knowledge, admits the inadequacy of methods hitherto employed and shows clearly how the anatomical difference essential to a great quality of mind might exist in a given brain without its being perceptibly altered from the average in weight, shape, or convolutions. On this point he cites strong evidence and suggests interesting lines for investigation.

He further expresses the belief that the brain is a progressive development; that "no boundaries can be drawn between the mental possessions of the lowest and the highest vertebrates;" and finally that the evolution of the human brain and human intellect has not yet reached its maximum. E. P. LYON.

KULTUR UND SCHULE. Präliminarien zu einem Schulfrieden im Anschluss an die Preussische Neuordnung von 1 April 1892. Von *Dr. Alex. Wernicke.* Osterwieck: A. W. Zickfeldt. 1896. Price, M. 2.40.

The pamphlet is a protest against the narrowness of those educators who would give all advantages to the gymnasial course and deprive the *Realschulen* even of the privileges which have reluctantly been conceded to them in Germany. The author is a man of serious convictions fighting for a noble cause. A discussion of his expositions would be out of place here, because whatever the school problems may be with which we are confronted in English-speaking countries, there is little danger of tyranny on the part of classical philologists.

ADAM SMITH'S PÄDAGOGISCHE THEORIEN IM RAHMEN SEINES SYSTEMS DER PRAKTISCHEN PHILOSOPHIE. Von *Dr. phil. Paul Bergemann.* Wiesbaden: Emil Behrend. 1896. Pages, 64. Price, M. 1.20.

Adam Smith's theories of political economy are well known while his views on the subject of education are neither remembered nor recognised. Dr. Bergemann therefore calls attention to Adam Smith's pedagogical propositions, which are treated in several chapters of his *Inquiry Into the Nature and Causes of the Wealth of Nations*, and sheds light upon their significance by setting them forth in their historical connexion and contrasting them with the views of other contemporary thinkers.

The editors of the *Vierteljahrsschrift für wissenschaftliche Philosophie* propose a prize of five hundred marks for the best solution of the following problem:

"Nachweis der metaphysisch-animistischen Elemente in dem Satz von der Erhaltung der Energie und Vorschlag zur Ausschaltung dieser Elemente."

The essay must be written in German, but competition is not limited to any nationality. Size should not exceed fifty or sixty pages of said magazine. Latest term, October 1. Address the editors of the *Vierteljahrsschrift*, Privatdozent Dr Fr. Carstanjen, Zürich V Englisch Viertel 49, or Dr. O. Krebs, Zürich V Minervastrasse 46.

Instead of the author's name each essay is to be superscribed by a motto. An accompanying envelope, also superscribed by the motto, is to contain the author's real name and address. The judges will be: Prof. Dr. Ernst Mach, of Vienna Prof. Dr. Alois Riehl, of Kiel, and the two editors of the *Vierteljahrsschrift*.

Mr. Thomas J. McCormack, the translator of Prof. Ernst Mach's *Mechanics* and *Scientific Lectures*, and of numerous other scientific works offering great difficulties to reproduction in English form, has been connected with The Open Court Publishing Co. since the foundation of *The Monist* and has rendered the editor much valuable assistance both in the reviewing of books and in the general supervision of the editorial work. Beginning with the April number he will be more closely associated with the staff of both *The Monist* and *The Open Court* in the capacity of assistant editor.